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Martijn Storms · Mario Cams
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Editors

Mapping Asia: Cartographic Encounters Between East and West

Regional Symposium of the ICA Commission on the History of Cartography, 2017

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Preface

This volume comprises a selection of the research papers presented at a two-day symposium on the history of cartography, which took place at Leiden University Library on September 15–16, 2017. The symposium was titled *Mapping Asia: Cartographic Encounters Between East and West* and was co-organized by Leiden University Libraries and the Commission on the History of Cartography of the International Cartographic Association (ICA). Over 70 participants from 23 countries in Asia, Europe, and North America attended the symposium, and 30 papers were presented. We hope that this symposium turns out to be the first one in a series of regional symposia on the history of cartography, focusing on a specific region and organized in the years in between the general symposia of the ICA Commission on the History of Cartography.

The main theme of the conference was the interaction and exchange between Asian and Western cartographic practices. It has been strived for to specifically select these papers that focus on this mutual influences of cartographic traditions, also including the inter-Asian interaction in cartography (especially the influence of China and India) and the influence of Arabic mapping traditions on Asian (and European) cartography. Regarding the periods in history, the papers varied from medieval worldviews and the age of discovery, via the period of colonial and missionary cartography to the twentieth century, post-colonial mapmaking. Special attention was paid to the cartography of the Dutch East India Company (VOC), colonial, topographic mapmaking in the Netherlands East Indies, relation between the Dutch and Japanese, and the influence of and relations with Chinese cartography.

This first regional symposium was held within the framework of the Leiden Asia Year. Throughout 2017, Leiden was the leading center for Asia in terms of research, teaching, collections, and expertise. The Leiden Asia Year was prompted by the building of the Asian Library on the roof of Leiden University Library. The Asian Library was opened on September 14, 2017, by Queen Máxima. The collections in the Asian Library that are brought together by Leiden University Libraries belong to the foremost collections on Asia worldwide. The collection on Indonesia is the largest worldwide, including the collections of the Royal Tropical

Institute (KIT) and the Royal Netherlands Institute of Southeast Asian and Caribbean Studies (KITLV), both acquired in recent years. The Kern collection covering South Asia and the Himalayan region is one of the largest collections in Europe. The Asian Library also houses the largest Chinese collection in Europe. The Japanese collection consists of a unique collection of materials brought to the Netherlands by, among others, Philipp Franz von Siebold (1796–1866).

Alongside the symposium, two cartographic exhibitions were organized. In Japan museum Siebold Huis, the exhibition *Mapping Japan* was co-curated by Radu Leca and Martijn Storms. The exhibition focused on the maps of Japan brought together by Siebold and the international exchange of knowledge and geographic information, methods, and techniques, which led to a significant development in cartography. In 1829, he was found guilty of spying, for being in possession of maps, and banished from Japan. Back in Leiden, Siebold published a map of Japan himself. Manuscript draft and annotated proof prints of this map are kept at Leiden University Library as well. A second exhibition *Mapping Asia* took place at Museum Volkenkunde, the national museum of ethnology. The exhibition was put together by Daan Kok, Fresco Sam-Sin, and Martijn Storms. This exhibition focused on the variety and subjectivity of maps, on different cartographic traditions, worldviews, and power relations. Top piece of the exhibition was the full-size reproduction of the so-called Kangxi map of the Chinese Manchu Empire. The original map consists of 41 woodblock sheets. Digitally mounted this resulted in a map measuring 280 × 460 cm.

We would like to acknowledge our gratitude to Leiden University and especially to its University Library and its Director, Kurt De Belder, for his support.

Leiden, The Netherlands — Martijn Storms
Macau, China — Mario Cams
Arlington, TX, USA — Imre Josef Demhardt
Amsterdam, The Netherlands — Ferjan Ormeling

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Editors and Contributors

About the Editors

Martijn Storms (Arnhem, 1978) studied human geography and planning at Utrecht University, where he specialized in GIS and cartography. He is Curator of maps and atlases at Leiden University Libraries and Project Coordinator for *Koeman's Atlantes Neerlandici* at Brill publishers. Besides, he is Member of the Editing Board of *Caert-Thresoor*, the Dutch journal on the history of cartography and National Representative of the Netherlands for *Imago Mundi*. He was symposium Director of the *Mapping Asia* symposium reflected in this volume.

Mario Cams obtained his Ph.D. from the University of Leuven in 2015 and is currently Assistant Professor at the University of Macau's Department of History. He is the author of *Companions in Geography: East-West Collaboration in the Mapping of Qing China* (*c. 1685–1735*) (Leiden/Boston: Brill, 2017), in which he revisits the early eighteenth-century surveying and mapping of Qing China, one of the largest cartographic endeavors of the early modern world. His current research continues to focus on Qing cartography as well as on exchanges in maps and geographies between Europe and East Asia before the twentieth century.

Imre Josef Demhardt is interested in post-enlightenment cartography, colonialism, and regional studies with a focus on Central Europe, Sub-Saharan Africa, and North America. Besides numerous articles and several books on these subjects, he is involved as co-editor of Vol. 5 (Nineteenth Century) in the encyclopedia project on the History of Cartography. He holds the Garrett Chair in the History of Cartography at the University of Texas at Arlington and currently serves as Chair of the ICA Commission on the History of Cartography.

Ferjan Ormeling held the chair of cartography at Utrecht University 1985–2010 and since then is part of the Explokart research group at the University of Amsterdam. His research focuses on atlas cartography, toponymy, and the cartographic history of the Indonesian archipelago, either separately or in combination. He was one of the editors of the national atlases of the Netherlands and contributed to the Comprehensive Atlas of the Dutch East India Company. From 2007 to 2017, he was vice-chair of the United Nations Group of Experts on Geographical Names.

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The Topographic Survey of the Netherlands East Indies, Batavia 1864–1950

Ferjan Ormeling

Abstract In 1864 the mapping brigades of the Royal Netherlands Indies Army were given separate status directly under the General Staff, and this was later regarded as the starting point of the Topographic Survey of the Netherlands East Indies. They started with the systematic survey of Java, to produce a topographic map series 1:100,000. By 1886 this had been completed, in combination with a land-use survey, and the surveys of the outer isles started. Because of its advanced reproduction process, this map series fetched more prizes at world exhibitions than any other map product before WWI. Reactions by the army, were less positive, but around 1900 a better terrain representation, a more sensible sheet subdivision and timelier provision of map material had been effectuated. In the twentieth century a training brigade, a triangulation brigade and from the 1920s onwards a photogrammetry brigade were added, signs of an increasing professionalization. In 1939, when the 75th anniversary of the Survey was celebrated, large scale topographic maps at scales larger than or equal to 1:100,000 had been produced for all of the archipelago, with the exception of the scarcely inhabited primeval jungle in Borneo and New Guinea. By 1946 the Survey was under Dutch control again, after the Japanese intermezzo, but due to wartime activities on Java, only mapping programmes on the outer Islands were engaged in. In June 1950, the Survey was transferred to the Indonesian authorities.

1 Discrepancies Between International Acclaim and Local Criticism

By 1864 the mapping brigades of the Engineering corps of the Royal Netherlands Indies Army were placed directly under the General Staff, and their headquarters were allocated a separate accommodation in the capital Batavia (now called Jakarta). This milestone was later regarded as the starting point of the Topographic

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Survey of the Netherlands East Indies, the *Topografische Dienst* (Van Staveren 1939). Back in 1849, the systematic mapping of the core island Java had started, with a legend and on a scale, that had been tried out during surveys of Western Sumatra in the 1840s by the Corps of Engineers. Java at that time was subdivided administratively into 23 residencies or provinces, and Batavia residency was first mapped. When the results were deemed successful, it was decided to proceed with the other residencies, in combination with a land use survey (called statistical survey), aimed at a better assessment of the land rent or land tax to be paid by every village. The scale of the field sheets was set at 1:20,000 and the presentation scale of the map series at 1:100,000.

After being made an independent agency in 1864, the survey under its first director Versteeg underwent a process of accelerated expansion. The systematic survey had started with just one mapping brigade but soon there were six mapping brigades in the field and the mapping of Java, as well as the triangulation of the island had been completed by 1886; allowing the service to start surveys of the outer isles of the archipelago. Looking back at this extraordinary endeavour one is struck with discrepancies.

The more than hundred multi-coloured sheets of the topographic map series of Java at the scale 1:100,000 were printed in the Netherlands, per residency. In Fig. 1 the dates of survey per residency are indicated. Thanks to the printing expertise of the director of the Topographical Survey in the Netherlands, Charles Eckstein, the map series fetched more prizes at world exhibitions than any other map series before WWI. The neat drawings of the plotting sheets at the scale 1:20,000 were printed as well, but in Batavia, in black and white with a support colour, and these served as canvas for the intensive infrastructure building programme that was to follow—railways, tramways and roads, factories, irrigation canals, and plantations.

On the other hand, the initial survey for the 1:100,000 residency map, suffered from the fact that three institutions were involved and cooperation between them

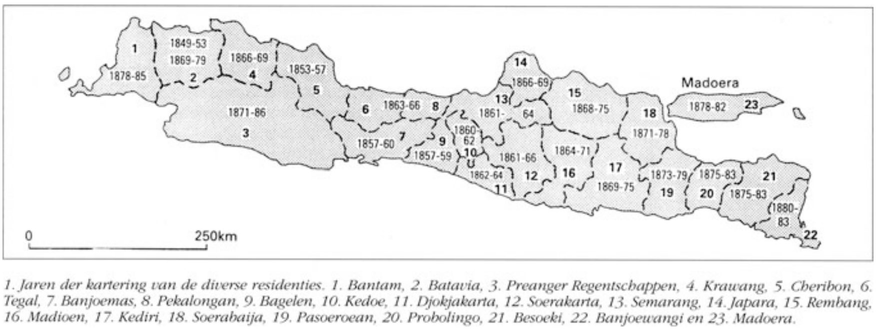


Fig. 1 Years when Java's residencies were surveyed for the 1:100,000 topographical map. The numbers 1–23 refer to the residencies: 1. Banten, 2. Batavia, 3. Priangan regencies, 4. Krawang, 5. Tjirebon, 6. Tegal, 7. Banyumas, 8. Pekalongan, 9. Bagelen, 10. Kedu, 11. Yogyakarta, 12. Surakarta, 13. Semarang, 14. Japara, 15. Rembang, 16. Madiun, 17. Kediri. 18. Surabaya, 19. Pasuruan, 20. Probolinggo, 21. Besuki, 22. Banyuwangi, 23. Madura

was problematical: the triangulation was done by the Navy, the statistical survey by the Department of the Interior and the topographical survey by the Army. It took until 1882 until the Survey was put in charge of triangulation, and until 1905 until it was also put in charge of the land use assessment. The land rent brigades of the Cadastre then became part of the Topographic Survey.

The Survey itself, as an army branch, suffered from the fact that army officers were supposed to circulate, do their stint at the survey and then move on, and their work would also be interrupted, every three or four years, by an extended stay in Europe. The circulating system only ended when the survey was made altogether independent in 1907, but the interruption process caused by lengthy foreign leave was to endure.[1] Both surveyors and draughtsmen, after having acquired their expertise, were subject to recruitment from civil agencies and private employment: civil administration paid better and had superior secondary fringe benefits such as pensions for widows and orphans and periodical leave also for the lower ranks. Enticing army personnel with these benefits increased the need for constant training to attract the necessary expertise.

The need for retrenchment became a recurring phenomenon, and led to many instances of penny-wise but pound-foolish spending cuts and even to existential crises. In the 1880s, it even was a matter of touch and go whether the Survey would be allowed to continue or be disbanded, after the completion of the first edition of the residency map series of Java, even if it was clear to all that half the maps already produced had become severely outdated by then.

The survey also suffered from the fact that prior to 1864 it had paid insufficient attention to a proper triangulation preceding the survey, which caused the need for a new partial triangulation and mapping programme in the early 1900s for Central Java. This resulted in the 1:25,000 series produced for Central Java (see Fig. 2).

The fact that the mapping was done on the basis of residencies, which frequently changed boundaries, and the fact that the printing of the 1:100,000 residency map was done in Europe, caused delays of more than a decade sometimes, and consequently the boundaries on the maps, when they were finally printed and sent back to Java, might no longer match the actual administrative subdivision. And despite the fact that the topographic map was a masterpiece of reproduction, it was not fit for use—at least not by the military. The fact that shadow hachures (according to the amended system by Lehmann) and up to twenty different land use tints were combined, obstructed too many details and prevented the interpretation of slopes. To cap it all, the map was so expensive to produce that, to allow for updating, only the infrastructure was resurveyed and in its second edition, the land use image of the first edition was retained, despite the fact that by that time, some 25 years after the first edition, a series of different cash crops had come to be cultivated (Fig. 4).

There also were the discrepancies between paper reports and the actual situation. Reading the annual Colonial reports produced by the Ministry of the Colonies from the 1840s onwards one gets the impression that mapping the archipelago was a

[1] 4 February 1907 no 25 (Ind. Stb. no 242).

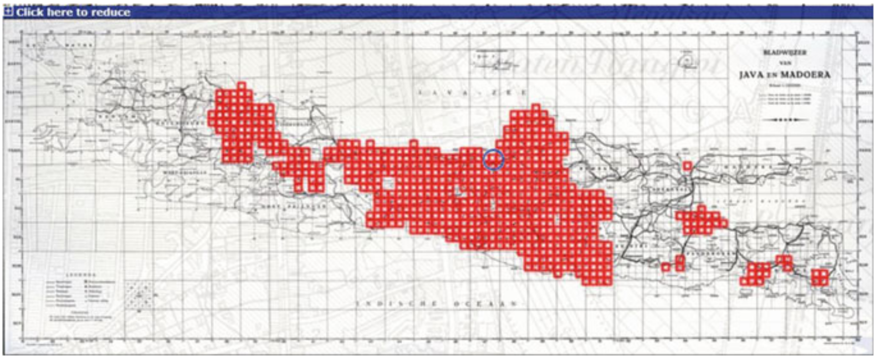


Fig. 2 1:25,000 mapping series of Java produced in the early 1900s

Fig. 3 The surroundings of Ambarawa on the 1:100,000 residency map (1871) and on the 1:100,000 quadrangle map (1913) The white gap at left is an exclave of Surakarta principality

continuing success story. On the other hand, the local (Netherlands East Indies) press was not much impressed by the publication delays, the maps getting outdated, and their lack of accuracy. It was also the officers themselves of the Survey that severely criticised current mapping policies, in the Military Journal (Indisch Militair Tijdschrift), in order to increase standards.

To summarize the discrepancies, the map series, which also suffered from poor distribution to the army staff involved, was a *military nightmare*, but at the same time a *geographer's dream*. It showed for the first time—and that is why it earned all these gold medals at world exhibitions—what land use in the tropics looked like, long before the British geographer Dudley Stamp launched his World Land Use Survey. A couple of figures with different landscape types depicted will be shown.

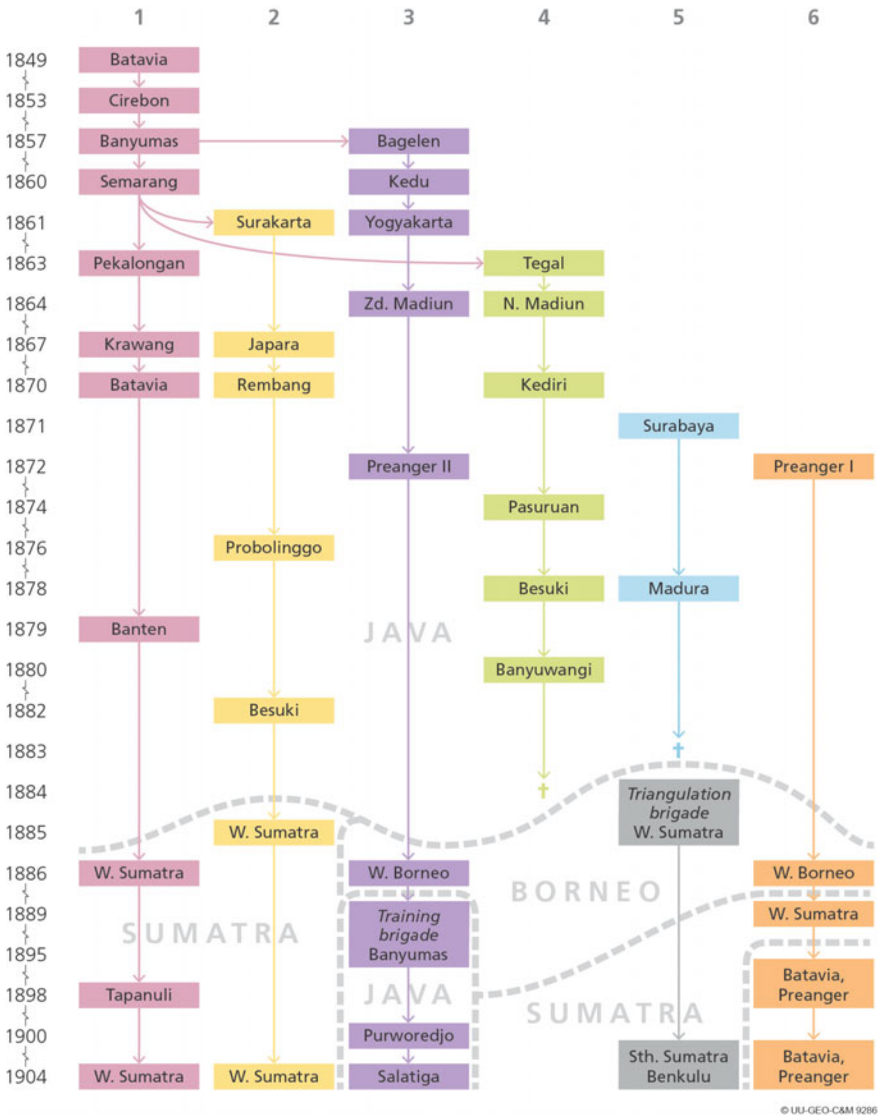
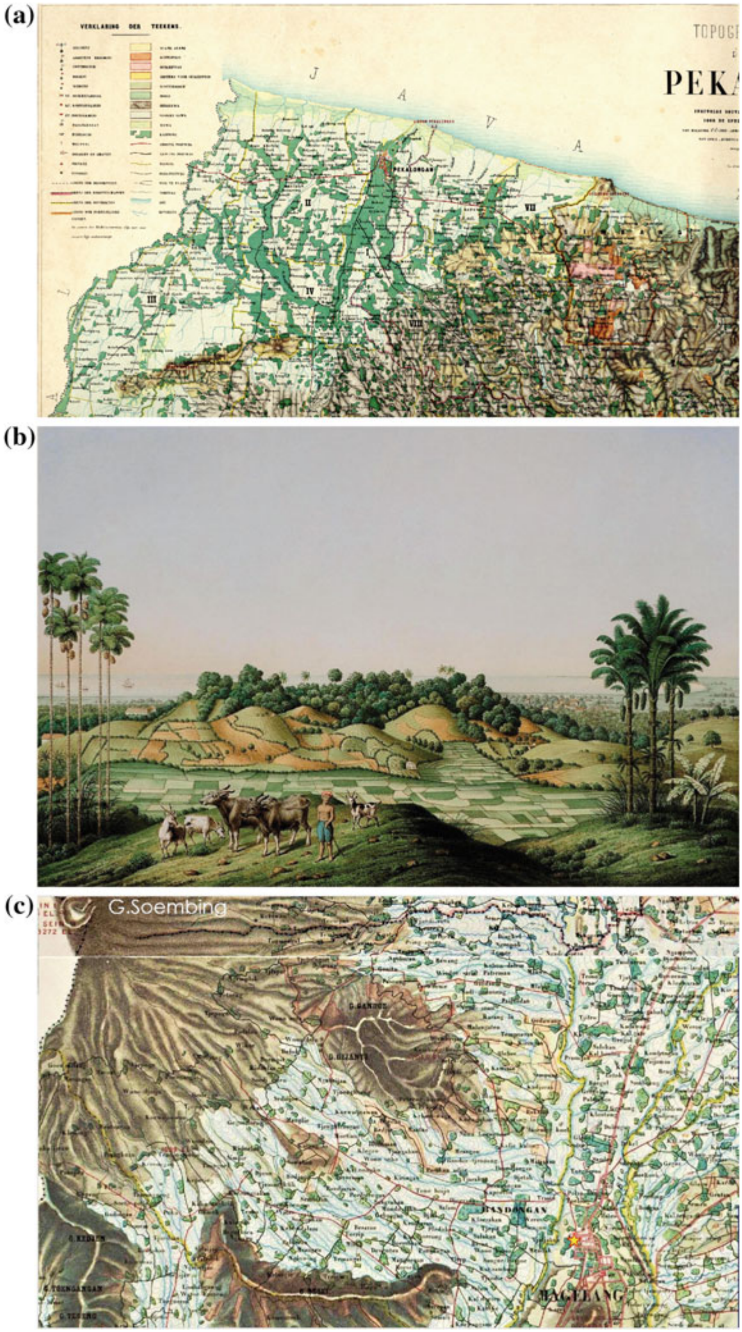


Fig. 4 Dance of the mapping brigades: numbers 1–6 refer to the mapping brigades that from 1849 to 1884 mapped the various residencies on Java and then moved on to the outer islands

2 Residency Maps

There are (Fig. 5a) wide coastal plains with elongated (bright green) villages along the rivers in between the blueish irrigated rice fields. There one can see how difficult it becomes to read the maps in the hilly uplands, where orange-coloured coffee estates


(a)
VERKLARING DER TEEKENS
TOPOGR
PEKA
J A V A
PEKALONGAN
(b)
(c)
G.Soembing
BANDONGAN
MAGELANG

◂**Fig. 5** Examples of landscape types depicted on the 1:100,000 residency maps, with, for comparison some water colours by Franz Junghuhn from his work *Java, deszelfs gedaante, bekleeding en inwendige struktuur* (4 vols., 1850–1854): **a** Detail from map of Pekalongan residency (1877), **b** view of Semarang plain by Junghuhn, **c** detail from map of Kedu residency (1869), **d** view by Junghuhn of Mt Sumbing from the resident's house in Magelang (marked by asterisk), **e** detail of map of Madiun residency (1878), **f** view by Junghuhn of Gunung Sewu area, **g** detail of map of Surakarta principality (1869), **h** detail from map of Surabaya residency (1884). Residency maps from Utrecht University Library VII C

and pink sugar cane fields still can be discerned. What the plain looked like is shown in Fig. 5b, by the German naturalist Franz Junghuhn in the 1840s, with irrigated rice fields in all stages of cultivation alternated by dry crops or grazing fields where irrigation was impossible, villages hidden amongst the fruit trees and occasional Chinese hillside tombs. In the dryer eastern part of Java, with its limestone mountains, conditions were optimal for large teak forests, coloured light brown there, which gave rise to the native shipbuilding industry on the coast. Dry rice fields would be shown there a tiled yellow (as in 5h) and villages bright green. Flag symbols, as in Pekalongan and Surabaya would refer to the administrative infrastructure, both indigenous and colonial. There is the landscape of Java's wild rocky south coast, as in Fig. 5e, alternated with a karst area in the westerly part, overgrown with tall leathery grass, called *alang alang*, pictured yellow here, and bright green villages again. You can see why the soldiers objected to a map too dark to decipher even place names. The karst area was depicted by Junghuhn in Fig. 5f, with the high grass that almost hides the travellers and in which tigers caused havoc.

There were the volcanoes (Fig. 5c), such as Mt. Sumbing, with its barren higher slopes, and rice fields reaching up the lower slopes. In Magelang, the provincial capital southeast of the volcano, the resident's house is marked with an asterisk. It was from there that Junghuhn, as a house guest, painted his next water colour (Fig. 5d). The patches of forest in the foreground are the villages, hidden amongst their fruit trees. You will now understand why villages were rendered green on the topographic maps of the Indies.

Elsewhere, volcano slopes were cultivated, such as those of the Merapi volcano (Fig. 5g) where one may discern in the plain the irrigated rice fields, with interspersed the pink sugar cane fields. Going uphill, there are the yellow unirrigated crops, with the orange coffee plantations in-between, and the forested top.

There is the fishpond landscape of Surabaya (Fig. 5h), with for the city itself the clear distinction between the red, that is brick European city and the green that is wooden native city. In the port, there is the naval establishment; around the city, in the delta of the Kali (river) Mas, there are irrigated rice fields, on dryer ground the tiled yellow tints indicate unirrigated rice fields. The squares northwest of Gresik indicate salt pans. The fish ponds are still there, 140 years later.

Not rendered here are the landscape of the Priangan plateau in West-Java, which was opened up later and deforestation occurred there only when the tea plantations were created from the 1850s onwards. On its residency map part of the road and rail infrastructure are visible, as are proofs of early industrialization, such as the lime kilns in the limestone mountains.

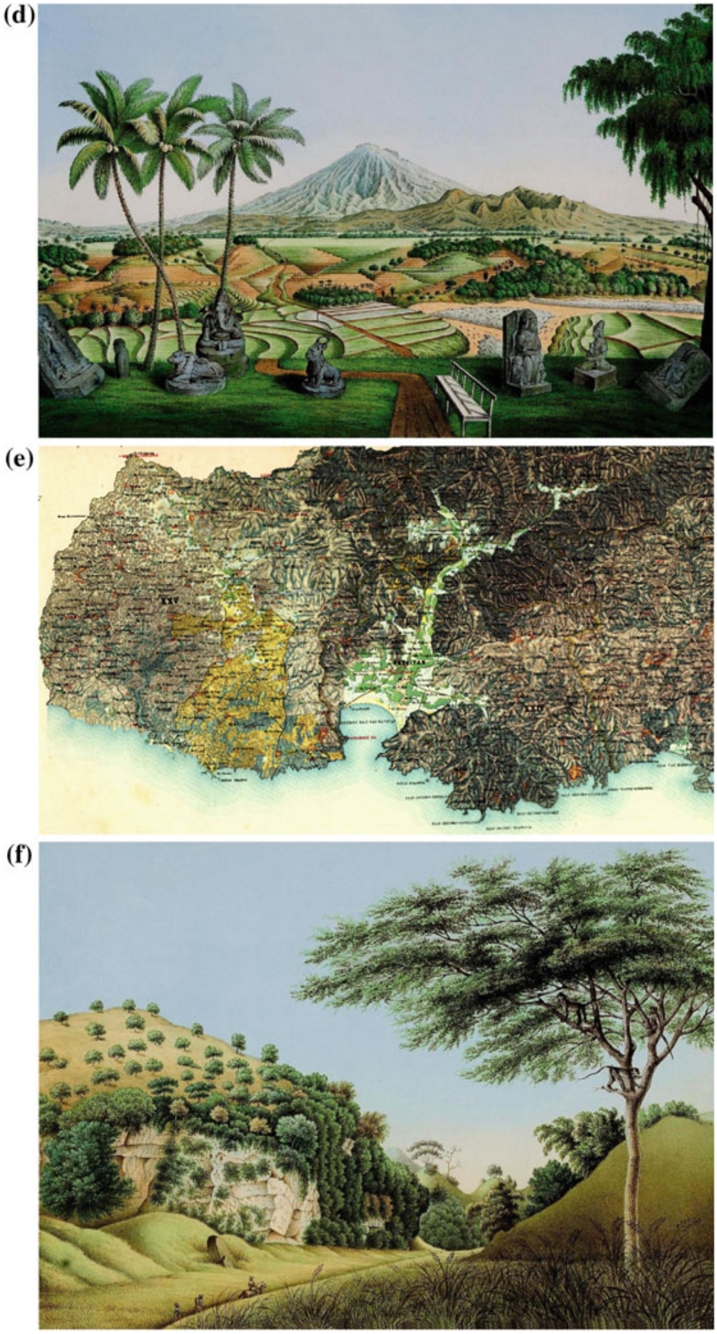


Fig. 5 (continued)

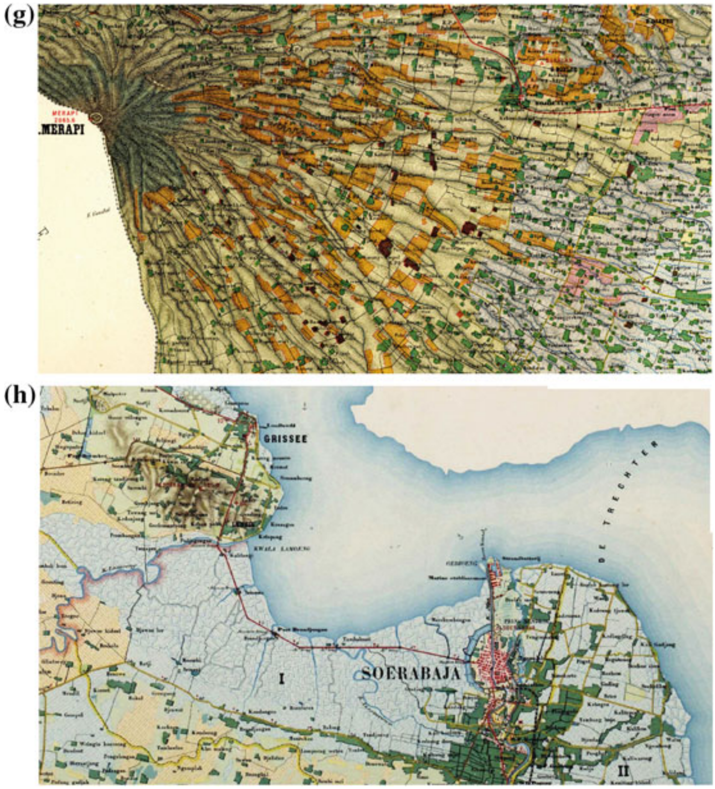


Fig. 5 (continued)

3 Professionalization of the Survey

Reverting to the negative aspects of the map series, we see that, in order to counter the criticisms, measures were taken that should contribute to a professionalization of the survey, already before the turn of the century. Rules and regulations were proclaimed, exams were introduced (Havenga 1883), instructions for surveyors published, and model sheets created (Fig. 6), so symbols and signatures used on the map were finally homogenized. The main difference between for instance the legend of the 1:100,000 residency map series and the 1 in. to the mile map series of the Survey of India was the use of colour on the former to indicate land use. There are over twenty different land use colours here. The model sheet in Fig. 6 is done without hachures, and it looks very clear and crisp therefor, but the practice was to include relief representation.

The land use portrayal on the topographic maps was simplified by 1900 to the coloured rendering of paddy fields and forests only, so that the contour lines were more easily discerned now (see Fig. 3, right), and a systematic island-wide sheet

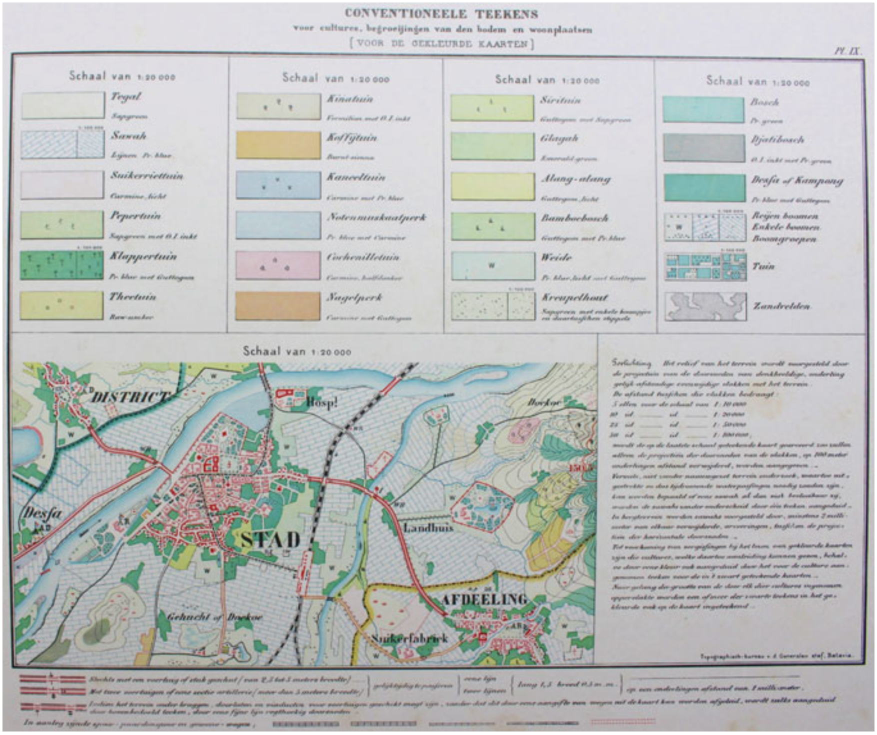


Fig. 6 Model sheet for the 1:100,0000 residency maps and the brouillon sheets 1:20,000 from which it was compiled

quadrangle system established instead of the mapping per residency. In the twentieth century, the systematic mapping of the outer islands was speeded up, and a map series 1:50,000 of Java was set up, completed and frequently updated (Fig. 7). Here is an example from this map series, taken from the Bantam residency in Western Java.

As was for instance the case in the multilingual Habsburg Monarchy, where German was the command language in the army, and consequently also on the army maps, the same goes for this series: Only Dutch is written on the map. At that time, there was no unified Indonesian language as yet, and the Dutch would have had to choose either Malay, Sundanese or Javanese, had they wanted to use native languages on these maps as well (Fig. 8).

As many government departments, such as the geological survey, the forestry department, the irrigation department, the cadastre and the railways, had developed their mapping activities independently, a centralisation commission was set up in 1902 in order to check whether any savings could be realised. In 1905 the tasks and activities of the mapping branches of all the relevant government organisations were tuned to each other in order to prevent overlap. All the printing of maps was

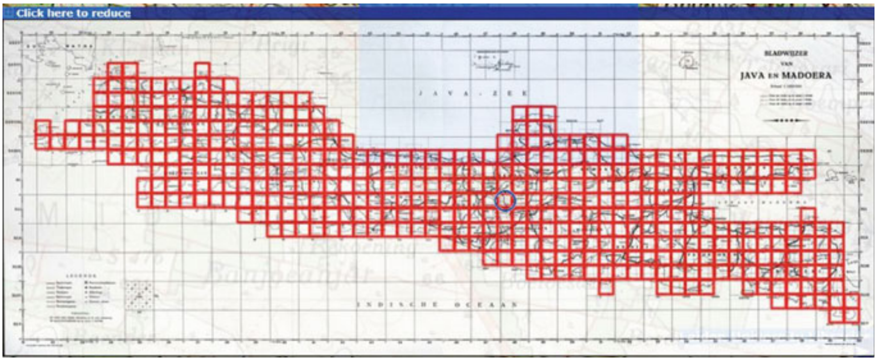


Fig. 7 Sheet index for the 1:50,000 quadrangle topographic map series of Java

allocated to the presses of the Topographic Survey in Batavia. This made it the largest printing establishment in Southeast Asia. The premises of the Survey in Batavia were extended again and again.

In 1874, the Survey consisted of six mapping brigades with altogether 84 persons in the field and about 150 in the Survey headquarters, mostly draughtsmen who drew the fair drawings of the maps to be reproduced, either in the Netherlands (the multi-coloured 1:100,000 residency map series) or the brouillon sheets with one or two supporting colours, at scale 1:20,000, printed in Batavia. The survey had established its own training brigade and schools, first in Central Java and finally in Malang in East-Java so that the availability of trained personnel improved.

4 Statistical Survey

In order to gauge the indigenous contribution to topographic mapping, we first have to turn to the statistical survey. In 1853, it had been ordained that the systematic topographic and statistical, that is land use survey, had to go hand in hand, the latter under the aegis of the Ministry of the Interior. The initial idea there was to train indigenous staff, mainly sons of the gentry, to perform the survey of the rice fields, village by village, as the land taxes were raised on a village basis.[2] Sons of the local gentry would be literate, were less expensive than European personnel, and also had a better entry with the local population. The scales of these rather simple village land use maps varied from 1:1,000 to 1:2,000. As soon as the statistical survey of a residency had been completed, cadastral-statistical bureaus were set up, where the

[2]'De opmeting der sawa's [werd] dessa's gewijze verrigt door een civiele landmeter met daarvoor opgeleid wordende inlanders, veelal zoons van hoofden' Verslag van het beheer en den staat der Oost-Indische bezittingen over 1854 (Colonial report 1854).

Fig. 8 Sample of the 1:50,000 map series of Java

statistical maps were to be kept up to date, and where the land use changes between the various taxable land use categories were to be registered.

Despite the initial enthusiasm voiced in the colonial reports, the statistical survey never functioned well; the main reason was that the village heads made responsible for reporting land use changes, did not cooperate sufficiently. That is logical, as any increase in the reported land use would lead to an increase in taxes.

5 Indonesian Contribution

From 1860 onwards, the Topographical Survey was also allowed to employ as native draughtsmen those deemed suitable for this task.[3] The Survey of Yogyakarta, for instance, was performed in the 1860s by twelve surveyors and six Javanese draughtsmen and their names are listed on the map: Ario-Pringo-Loijo, Mwerto-di-Poero, Dano-di-Poero, Mangkoe-Kesoemo, Djoedo-Taroeno and Merto-Widjoyo (*Topographische kaart der residentie Djokjakarta* 1870). So, these would be the persons that in the field office produced the neat drawings from the brouillon sheets of the surveyors that were then sent on to Batavia to produce the compilation sheets 1:100,000. So, both the statistical and the topographical survey employed indigenous personnel.

The mapping brigades from the statistical survey (mostly manned by indigenous surveyors) were in 1877 transferred to the Cadastre and in 1905 to the Topographic Survey. The diagram in Fig. 9 shows the reduction of especially indigenous staff from the Cadastre and the increase in the indigenous staff for the Topographical Survey after 1905.

From 1896 onwards, in the reports of the Topographical Survey contained in the *Colonial Reports,* there is constant mention of the indigenous personnel receiving both practical and theoretical training in the Training brigade that had been established. Amongst the indigenous personnel, the results of the Malay, Sundanese and Javanese trainees were differentiated between in the Colonial reports, resulting in a preference for Javanese trainees, but after 1900 this practice was discontinued. After their training, the trainees could be either nominated as native topographers or as 'scouts' (an occupation considered similar to that of the 'pundits' in British India).

The training of the indigenous staff also included, at the end, their doing some practical work, and many of them were consigned to survey and map volcano craters. Many of these final projects were incorporated in the annual reports of the Survey, and the results are absolutely on par with the practical work projects of European trainees. They would be on their own out there, for two to ten months, doing such survey projects in an environment that was altogether alien and freezing cold at night as well (Fig. 10).

By 1910, the mapping brigades consisted mostly of native surveyors, as did the draughtsmen in Batavia. The percentage of native personnel increased over the years to 80% of the overall strength. This development was protested against in Parliament in the Netherlands, because of concerns over reliability,but either trust or thrift prevailed. The indigenous cartographers, surveyors and topographers were

[3]'Krachtens eene dit jaar aan het militair departement verleende magtiging, zullen aan het personeel der opname op Java, als kopij-teekenaars, ook kunnen worden verbonden eenige daartoe geschikte inlandsche jongelingen, hetzij aanverwanten van aanzienlijke Javanen of van mindere inlandsche hoofden.' Verslag van het beheer en den staat der Oost-Indische bezittingen over 1859 (Colonial report 1859).

	European staff			Indigenous staff			Total staff
Statistical survey	survey	records	total	survey	records	total	
1865			16	134	87	221	237
Cadastre							
1880	35	4	39	180	2	182	221
1881	34	3	37	190	12	202	239
1882	33		33	200	125	325	358
1886	52	4	56	231	124	355	411
1887	52	4	56	260	90	350	406
1889			55	260	126	386	441
1892			55			390	445
1901			51			418	469
1904			43			410	453
1905			43			278	321
1906			34			120	154

Topographical Survey			
year	European staff	Indigenous staff	Total personnel
1905	109	102	211
1915	180	315	495
1925	176	442	618
1935	118	350	468
1939	137	548	685

Fig. 9 Comparison of European and Indigenous staff employed in cadastral and topographic survey 1880–1939

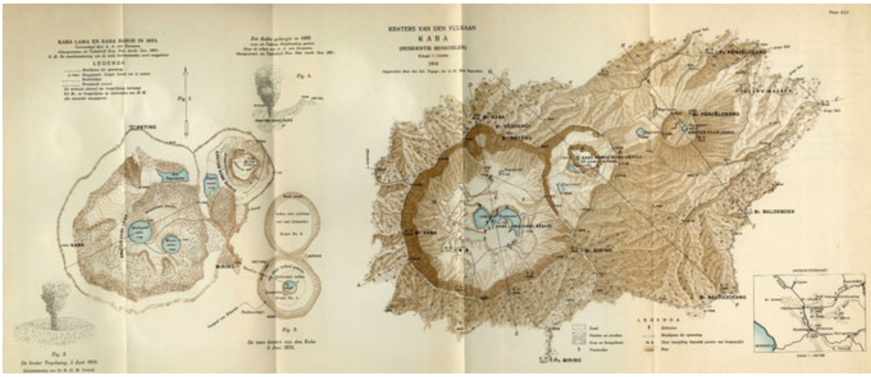


Fig. 10 Sample of a final project by 1st class native topographer Mas Sapardan, 1914. Published in the 1914 annual report of the Topographic survey, Batavia 1915

barred from the leading functions, which were reserved for Europeans—but due to the fact that they did not leave for Europe every 3 or 4 years for extended leave, as their bosses did, they did play an important uniting and concerting role.

But so did a group of mixed European-Indonesian descent employees, often raised in a military orphanage, whose fathers had either been killed in action or had returned to Europe without their offspring. The orphanage school, in Gombong in Central Java, was especially dedicated to the training of drawing skills, to be followed by a career in the Survey and some of the orphans made it even to officer rank in the Survey (Enthoven 1906).

6 Transfer to a New Mapping System

In 1897 Major Joseph Enthoven made it to director of the Topographic Survey, a reward for his outstanding previous actions—as a young officer he had served in the Aceh wars as scout and topographer; later he had drawn under cover a topographic map of Bali, at the time still a federation of independent kingdoms; from 1886 to 1895 he led the survey of Western Borneo, an area larger than England. In Western Borneo, (Fig. 11) as in Eastern Sumatra, there were no handy volcano summits to be used for triangulation, and the cost of building triangulation towers would have been prohibitive. The solution was to do a water-borne triangulation, using the inland river system as a base, where the accurate timepieces were transported over water in order not to disorganise them, in connection to astronomical positioning. This survey of Western Borneo, directed by Enthoven, was an epical endeavour. He described it in two volumes, rather modestly called *Contributions to the Geography of Western Borneo* (Enthoven 1903), written in a rather colourless prose, which did not do justice to the expedition. Enthoven's right hand man in Borneo was Werbata, decorated for bravery as a scout in the Aceh wars like his boss. Werbata, who started his career at the Gombong orphanage, was later detailed for 2 years to the Dutch West Indies, to do the survey of the Dutch Antilles. For a long time, he was fondly remembered there, for his kind demeanour, different from that of the macambas, the white surveyors the local population was used to.

In 1897 also, Director Enthoven introduced a new system of map scales (1:25,000, 1:50,000, 1:100,000) and a sheet subdivision valid for the whole archipelago.

The report of the Centralisation commission referred to above also led to a separation of the Topographical Survey from the General Staff, and forthwith it became Section 9 of the War Department, as a completely independent part of the army as can still be seen on the façade of the social seat of Badan Informasi Geospasial in Jl Dr Wahidin Satu, Jakarta (the previous Tuin du Bus 1, named after the second governor-general of the Dutch East Indies Leonard du Bus de Gisignies who served from 1826 to 1830).

Enthoven saw to it that the land use register of Java and Madura was completed within 10 years and made it serve the updating of the 1:50,000 maps of Java as

Fig. 11 Detail of sheet XIII, Sanggau, of the 1:200,000 map series of Western Borneo surveyed 1889–1891, published Batavia 1893

well. He ordered colour printing presses, so that all the maps could be printed in Batavia instead of in the Netherlands. By his links to Governor General Van Heutsz, whom he had got to know during the Aceh wars, he was able to profit from the latter's vision of a unified state (Lemster 1942, p. 167) and get the funding to speed up the mapping programme for the outer islands. For historians of the Survey he did the meritorious act of starting the annual reports of the survey, an inexhaustible source in which he also made known to the general public the manifold activities of the Survey Department.

7 Independent Development

In the 34 annual reports published in the years 1906–1940 not only the mapping endeavours of the past year, the personnel, and production figures were made public, but they also contained reports on the cultural, physical and social aspects the surveyors and topographers came into contact with. As with so many other aspects of the Topografische Dienst in Batavia, this would have been something unheard of in the Metropolis, and it underlined the independent development of the Survey. Temple buildings in Bali, geographical names in Sundanese and Javanese, population density maps, geological and geomorphological studies, sultan dynasty tombs, archaeological excavations and indigenous juridical systems were dealt with. What also was reported on were the tests done at the survey on other methods of terrain representation, like Peucker's colour system or the highlighted contour lines of Tanaka Kitiro.

While the surveys were gradually extended over the outer islands, and photogrammetry was gradually introduced, earlier than in the metropolis, with Samuel van Valkenburg (1924–1927) and Ton Pannekoek (1935–42), the Survey in the 1920s and '30 s disposed over two outstanding geographers that built its small-scale cartography section. Van Valkenburg (before moving on the USA where he became professor of geography at Clark University) started systematic geographical descriptions of regions, he and Pannekoek trained the draughtsmen in generalization for small-scale maps, and Pannekoek was the driving force behind the production of the N.E.I. sheets of the *International Map of the World*—by 1939 seventeen of the thirty sheets of the *International Map of the World at the Millionth Scale* were ready (Pannekoek 1938a) and three years later all sheets existed at least in a provisional edition. He also realised at the Survey the drawing of all sheets of the *Atlas van Tropisch Nederland* in 1938, that is the atlas of the Dutch East Indies, the first national atlas of a country in the Tropics. As a result of his generalization training programme, he left us with a series of exemplary generalization rules, for coastlines, rivers and settlements (Pannekoek 1938b), that were published in the *International Yearbook of Cartography* in the 1960s.

Pannekoek also systematized sketch map production (see Fig. 12), that is the production of preliminary maps based on the hydrographic surveys and the additions by explorers, missionaries, administrators and mining companies. In combination, all these sources (each rendered in a different colour on the slide at left) provided a lot of information that was now combined and brought into the proper perspective, as you can see at right. In fact, this was a continuation of the endeavours of the Encyclopaedic Bureau, set up under the Ministry of the Interior to study the outer islands, that had instituted a systematic map collection in 1920 with the same objective, but was disbanded in 1921 already.

Meanwhile, the surveying brigades of the topographical survey continued their work on Sumatra, Borneo, Celebes, the Lesser Sunda Isles, the Moluccas and New Guinea (Fig. 13). By 1939 the regular updating programme was thwarted by resurveys of strategic areas, especial coastal ones, and of the mountainous Preanger area on Java, with the 'white capital' Bandung where the army expected to be able to hold out.

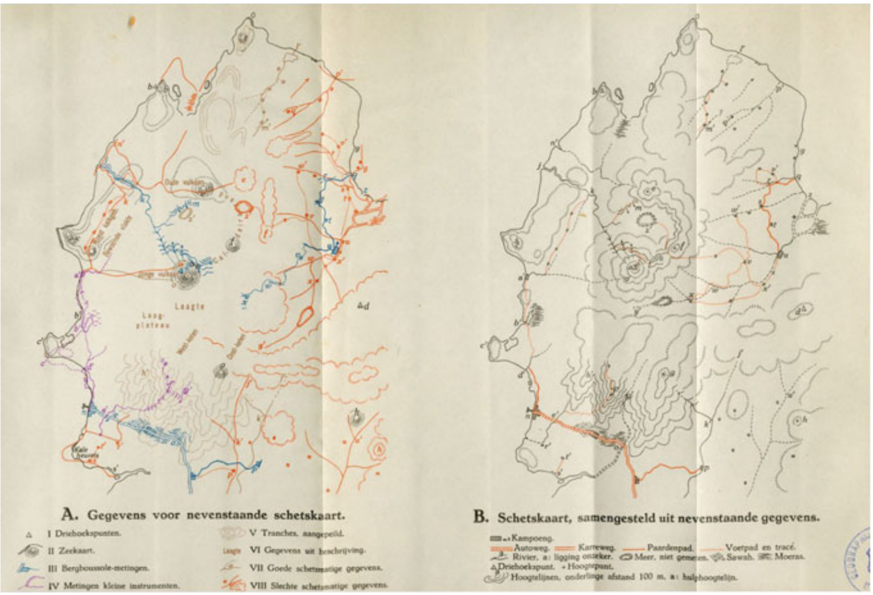


Fig. 12 Principle of sketch map production: data from different sources (each with its own degree of reliability, each rendered in its own colour, at left) are combined to produce a sketch map compilation (principle based on A. Pannekoek, Batavia 1940)

Fig. 13 Coverage with topographic maps (dark or light brown) and sketch maps (orange or green), in 1939

From 1942 to 1945 the indigenous personnel of the Topografische Dienst worked for the Japanese army; when the Dutch again were in charge in 1946, the Service was in some disarray and most of the archives destroyed. In Batavia and Bandung mapping activities of the Topografische Dienst were started up again, and continued for four years—not on maps for Java where military action prevented surveys outside the cities, but in the outer islands still under Dutch military control. For Borneo for instance an aerial survey mapping project had been set up with American help, the TOPAM project, with American aircraft from Clark basis in the Philippines producing the photographs and the Topografische Dienst producing the control points. The transfer of sovereignty to Indonesia prevented the actual

Fig. 14 Portrait of Wilhelm Linnemann

production of these new topographical maps of Western Borneo, 70 years after Enthoven's river-borne survey. In June 1950, the organization and premises of the Topografische Dienst were transferred to the independent Indonesian authorities which asked some of the staff (including my father) to continue their work (Fig. 14).

To wind up, some human aspects of this Topographic Survey that combined two worlds will be referred to, as were the difficulties this presented to those in-between: by describing the career of Wilhelm Linnemann, whose father, a German who served as a soldier in the Netherlands East Indies Army, returned to Europe in 1900, leaving his son in the Gombong orphanage. Wilhelm did so well there, that he was sent to the Netherlands to follow the officer's training school in the town of Nijmegen. After his graduation in 1916 he could not get back immediately because of the war. Back in the archipelago in 1918, he first served as a military administrator of Eastern Celebes, but in 1926 transferred to the Topographic Survey, and followed the relevant training at the survey school in Malang. As a final project he had a year to survey and map an area of 500 km^2 around the top of the Kelud volcano in Eastern Java. After its successful completion which also amounted to climbing the volcano for mounting a survey signal at its top, he reported to the Survey headquarters in Batavia and there was assigned to became head of the surveying brigades in Western Sumatra, where he served for four years and where he developed new, more efficient surveying methods. Returning to Batavia he spent a three your tour as deputy along the various sections and departments of the Survey, and, as Major Linnemann, he was just set to become the next director of the Survey, when he—because of an affair of honour implicating his wife and a white colleague—he followed the current code of conduct and resigned. Half a year later, instead of directing a prestigious organization of some 650 dedicated employees, he was tobacconist in Nijmegen, the small town in the Netherlands he had gotten to know when quartered there during his previous stay in that distant and cold environment, when the outbreak of the First World War prevented his return to his homeland after graduating from the Military Academy. His memoirs present a most interesting image of the Topografische Dienst, at odds with the official reports (Hooghoff and Ormeling 2005).

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The Importance of Diacritics on Dutch Historical Map Toponyms in Java, Aceh and Nias

Albina Apriadsa, Ari Cahyono and Rossaydiana Apriadna

Abstract The existence of diverse local toponyms in the Dutch East Indies encouraged Dutch cartographers to adapt their writing system. The use of diacritics was the solution chosen to keep the original pronunciation of the toponyms and thus save their original meaning. Diacritics were applied and functioned differently throughout the archipelago, depending on the complexity of the local languages. Java, Aceh and Nias are used as examples here to show how diacritics were added to toponyms in different ways. The maps used for this research belong to the historical map collection of the Royal Tropical Institute and have been downloaded from the Leiden University Libraries website. All maps were published during the Dutch colonial period in the East Indies in the 19th and 20th centuries. Not all maps in that collection were consulted, but only those that show areas with toponyms having special characters or phonemes. For this reason, maps from the Javanese, Acehnese and Nias language areas were chosen, as these languages have the strongest character variation compared to other parts of the East Indies. Our research shows that in the locations observed, the addition of diacritics to the toponyms was not always done in a consistent way. Either pronunciation shifts among native speakers or misspellings during the romanization process could be the reason why the toponyms are pronounced differently from their original pronunciation today. Diacritics were applied to the official maps of the Dutch East Indies between the 1900s and the 1920s, before they were gradually phased out in the 1930s. Moreover, after the Perfected Spelling System of the Indonesian language

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(*Bahasa Indonesia*) was established in 1972, the use of diacritic signs was extremely limited and even could not be found anymore in the daily standard Indonesian language, including the present official maps. Further regulation on toponyms is the Minister of Home Affairs Decree No. 39/2008 concerning General Guide for Topographical Names Standardization. It is mentioned on Article 7(2) that diacritics are not allowed for all romanized Indonesian toponyms. This affected non-native speakers, and even native speakers who no longer able to pronounce the toponyms properly and these are now threatened with the loss of their original meaning.

1 Introduction

At least 700 languages are spoken nowadays in Indonesia (Simons and Fennig 2017). Most of them have no original writing system. They were first written down using foreign writing systems when the archipelago became a centre of trade. Early Arab and Chinese merchants communicating with the local population started to render local names in their standard writing systems.

Place names or geographical names are part of descriptive texts, and as such they need to be precise, unambiguous and specific. Good oral communication is important as well, as imprecise pronunciation can lead to an incorrect identification of the subject (Fulton 2010). Place names can be used for orientation purposes and for identifying resources and problems wherever one is (Cahyono et al. 2017). Sources of place name information include historical maps, reference maps, gazetteers and geographic information services such as GeoNames, GoogleMaps, OpenStreetMaps, etc.

Lach 1991, indicates that since Europeans arrived in the middle of sixteenth century, romanization efforts have been carried out in converting local manuscripts including maps, into roman script. The Europeans, especially the Dutch, produced maps of the region and inserted toponyms on them, according to their interpretation of local pronunciation and written according to the phonetic value of letters in Dutch (Lach 1991). In the nineteenth century, the spelling of the Dutch language was standardized in the Netherlands, but this did not apply to languages in the archipelago.

Meanwhile in the East Indies, the Dutch colonial administration set up a Commission for Native Schools and Popular Literature which, as its main task, had to provide suitable reading material. To render this reading material consistently, the Van Ophuijsen Spelling System was devised (Wurm et al. 1996). Charles Adriaan van Ophuijsen had published his book, *Kitab Logat Malajoe: Woordenlijst voor Spelling der Maleische Taal,* in 1901, that contained rules for the romanization of the Malay language.

However, not all languages in the archipelago could be rendered easily by using this system. The insertion of diacritics was chosen as the solution for preserving their original pronunciation. A diacritic is a mark near or through an orthographic or phonetic character or combination of characters indicating a phonetic value different from that given the unmarked or otherwise marked element (Merriam-Webster Inc. 2017). The Dutch maps published in this colonial period used this spelling system in writing local toponyms along with their typical diacritics. The rules lasted until the Indonesian language (*Bahasa Indonesia*) got its status as official language instead of Dutch.

According to the Statement No. 8, Section A of the 2nd *Bahasa Indonesia* Congress in Medan, held in 1954, *Bahasa Indonesia* was originated from the Malay language. This language had been a *lingua franca* spoken by coastal communities throughout the Malay Archipelago since the seventh century. It was simple and easy to learn compared to other languages spoken in the region. Basically, Malay had strong Sanskrit influences. Due to its flexibility, it could absorb many loan words and continued to develop over time. Malay had been recognized as official language in Malaysia, Singapore, and Brunei.

In 1928, at the Indonesian Youth Conference, *Bahasa Indonesia* was decided to be the unifying language and after Indonesia's independence in 1945, it was legalized as national language under the Indonesian Constitution. In 1947, this was officialised in the Republican Spelling System. This meant that in place names the phoneme -oe- had to be changed into -u-, the glottal stop was rendered by -k- and that the *trema* disappeared.

In 1972, the Perfected Spelling System led to further place name changes. Diacritics were gradually omitted when the Perfected Spelling System (Ejaan Yang Disempurnakan—EYD) for the Indonesian language was applied nationwide in 1972. On the other hand, according to the 4th Edition of the General Guidance for *Bahasa Indonesia* Spelling System that explained the 1972 Perfected Spelling System, diacritics could be optionally used for words with uncertain pronunciation, especially for sounds /e/, /ɜ/ and /ɘ/, but it could not be applied for toponyms.

The prohibition of using diacritics in Indonesian toponyms was asserted under the Minister of Home Affairs Decree No. 39/2008 concerning the General Guide for Topographical Names Standardization. Article 7(2) mentioned that diacritics were no longer allowed for all romanized Indonesian toponyms. Thus, this condition affected almost all indigenous languages as it implied the loss of their original pronunciation: that new spelling did not allow for the incorporation of any diacritic in any letter. The written representation of all indigenous languages that had more vowels than *Bahasa Indonesia*, had to be adjusted and written with five basic vowel letters only. However, several languages broke that rule.

Acehnese and Nias are two languages that still incorporate diacritics in their written texts. Acehnese preserves the use of the acute, grave, macron and diaeresis, whereas the Nias language continues the use of the diaeresis and macron. However, these diacritics are not included on current official maps, as the spelling of toponyms on maps must be based on the 1972 Perfected Spelling System. The diacritics that were part of these toponyms in the Dutch periods have been banned now. Therefore, non-native speakers should have difficulties in pronouncing local toponyms correctly.

The aims of this study were (1) to study the effect of the omission of diacritics on the consistency of the present spelling of toponyms and their pronunciation in Indonesia; and (2) to propose the International Phonetic Alphabet (IPA) as a solution to preserve the local spelling and pronunciation of living languages in Indonesia, and to prevent their future extinction. The use of IPA for Indonesian toponyms had also been regulated under the Minister of Home Affairs Decree No. 39/2008 on Article 7 (4): IPA could be used to describe toponyms with special writing and pronunciation.

The maps used for this research belong to the historical map collection of the Royal Tropical Institute and were uploaded from the Leiden University Library website (http://maps.library.leiden.edu/apps/s7). All maps were published during the Dutch colonial period in the East Indies in the nineteenth and twentieth centuries. Maps published on this website could be divided into six types: topographic, urban, thematic, nautical, building and unknown maps. Topographic maps are used as reference in the production of thematic maps including its toponyms. However, toponyms on thematic maps sometimes neglected the standard writing as shown on basic topographic maps. Therefore, topographic sketch maps and official topographic maps published by the government were chosen as main sources for this toponymical research.

Not all topographic maps on this site were observed. Only those with special characters were chosen. In this case, toponyms in Java, Aceh and Nias had the most outspoken character variation compared to other parts of the East Indies. Diacritics generally adhered to toponyms on maps of these areas. Dutch cartographers put diacritics in order to ease the pronunciation among non-native speakers who used the maps at the time. Diacritics used in toponyms were not applied in a consistent way, both geographically and temporally. Some diacritics used in maps of Java might not be found on maps of Sumatra or might be changed into other marks to represent the same sound. In addition, diacritics were not shown in a consistent way, as this depended on the varying customs how cartographers at the time converted local pronunciation to Dutch spelling.

For this study, native speakers from Java, Aceh and Nias were consulted to confirm whether toponyms are correctly spelled. With their help, toponyms have been written with standard IPA symbols. These symbols could be applied to deal with the pronunciation of all languages worldwide. By means of IPA, researchers could ascertain the relation between diacritics used and their pronunciation in each region.

2 Results and Discussion

2.1 Java

Javanese is mainly spoken in central and eastern Java, and sparsely used in its north-western part. There are three main dialect groups of Javanese: Central, Eastern and Western. Dialects from the Central group, notably Yogyakarta and Surakarta dialects are the official standard of Javanese. Javanese also has its own writing system called *Hanacaraka*. Foreign influence from Arabic had affected the conversion to *Jawi*. On the other hand, romanizing Javanese toponyms has been going on since European people mapped the island from the sixteenth century onwards.

The main problem of reading Javanese toponyms arises when distinguishing the sounds /a/ and /ɔ/. In standard Romanized-Javanese alphabets, the sounds are represented by a single root letter, <a>. Nevertheless, /ɔ/ sometimes was written by plain <o> which represented the sound /o/, too. In addition, no diacritics appeared to distinguish the sounds /e/, /ɜ/ and /ɘ/. They were written by simple <e>. In Javanese alphabet, both /e/ and /ɜ/ were represented by a single diacritic ‘taling’ placed before the letter, whereas a diacritic ‘pepet’ adhered above the letter was used to sound /ɘ/.

The first detailed map of Java, *Kaart van Java en Madura* by Le Clercq, printed in 1850, showed toponyms of the main populated places. Javanese toponyms were written in the roman alphabet without any guidance for non-native speakers to pronounce them correctly. No diacritics were used yet. It was hard for map users to distinguish the sounds /o/ and /ɔ/ and the sounds /e/, /ɜ/ and /ɘ/. For example, Sokowati /sokɔ’wati/ and Bagelen /bagɘlɜn/.

On a commercially produced map printed in 1890 (*Java*, 1:1,000,000 by E. de Geest), grave <`> and breve <˘> were among diacritics introduced to distinguish the sounds /ɜ/ and /ə/, i.e. Klatèn /k$^{\text{l}}$atɜn/ and Tĕgalredjo /təgal’rədʒɔ/. Diaeresis <¨> also was used to separate the pronunciation of two adjacent vowels as in Kraksaän /k$^{\text{r}}$ak’saʔan/.

The topographic map of Java, entitled *Java en Madoera*, published in 1905, omitted the function of acute to sound both /e/ and /ɜ/. The use of the ring sign <˚> was introduced to render the sound /ɔ/. However, this change was not applied to city or town names. Examples are the spelling of the town named Poerworĕdjo /pʊrwɔ’rədʒɔ/ and the district named Båråbudur /bɔrɔ’buɖʊr/, as well as physical objects such as River Prågå /p$^{\text{r}}$ɔgɔ/ (see Figs. 1 and 2).

Numerous thematic maps of Java were published in the early twentieth century by the Dutch, on which diacritics were written in inconsistent ways. Sometimes cartographers neglected, changed or added other signs, such as an uncommon acute to pronounce /e/. Generally, this occurred in thematic maps which were not periodically updated.

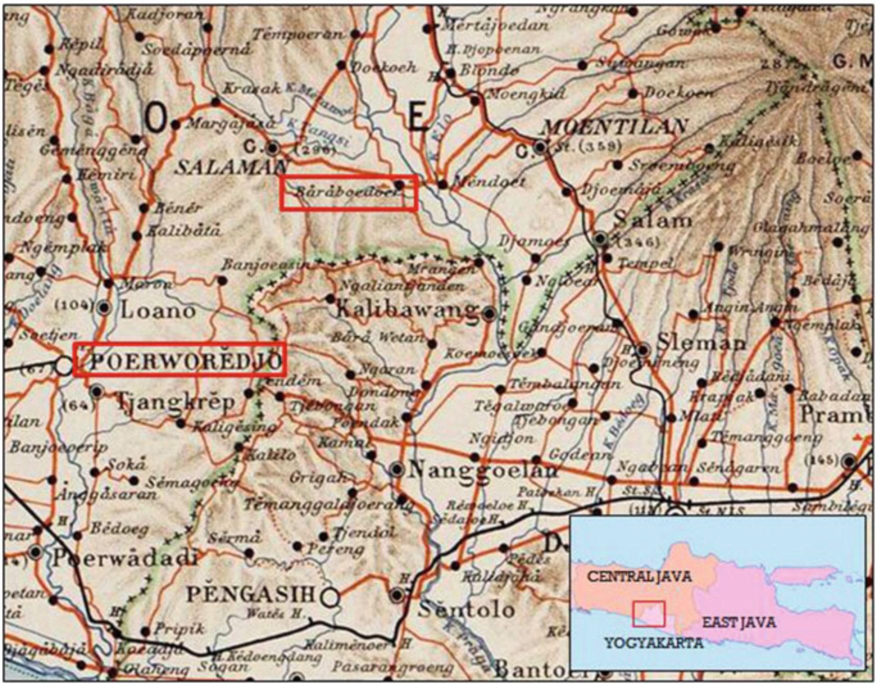

Fig. 1 Example of toponyms appearing on the topographic map *Java en Madoera*, 1905, Scale 1:500,000 (indicating the use of brave and ring). *Source* http://maps.library.leiden.edu/

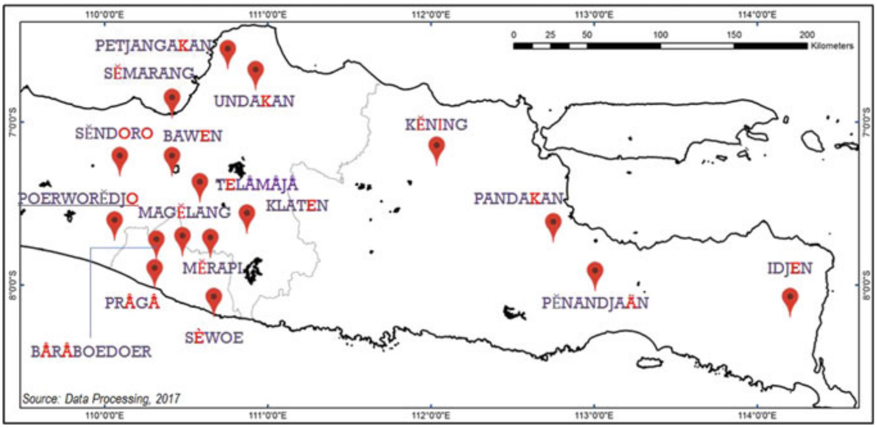

Fig. 2 Location of selected toponyms appearing on the 1905 Map of Java

However, in topographic maps, diacritics were still applied until 1930. At that time, all diacritics except the diaereses were omitted and the common Javanese sound /ɔ/ was represented by <o> as applied on 1850 version. This can be seen on the tourist map series of Java at the scale 1:250,000, produced by the *Topografische Dienst* and published in 1930.

To represent glottal stops, in 1945, the English map, entitled *Indonesia, Java, Madura and Bali*, A.M.S. T521, diaeresis appeared in minor although <k> was more widely used instead of diaeresis. Since then, newer version of topographic maps omitted all diacritics. This raised problems for non-native speakers in the pronunciation of Javanese toponyms. Once the sound /ɔ/ was replaced by <o>, non-native speakers could not distinguish when to pronounce <o> that previously was represented by <å>, as /o/ or /ɔ/. Javanese words mostly contain the sound /ɔ/ while Indonesian words, besides /a/, are more dominated by /o/ than /ɔ/. Those who are not accustomed to hearing Javanese words will prefer /o/ in order to pronounce the letter <o> in Javanese toponyms, instead of /ɔ/. In addition, the elimination of the acute, grave and breve diacritics made led to the incorrect pronunciation of <e> as /e/, /ɜ/ and /ə/ even for Javanese people itself (see Table 1).

2.2 Aceh

Aceh province is located in the northernmost part of Sumatra. Numerically, Acehnese is the most important language there, along with Gayo, Simeulue, Sikule and minority languages like Batak-Alas Kluet, Batak Dairi, Batak Karo, Malay, Minangkabau and Javanese. Acehnese is closely related to the Chamic languages, found in southern Vietnam and Cambodia. Acehnese itself has many dialects in terms of phonology, morphology and lexicography. The mixture with other languages, such as Malay, and geographical conditions have resulted in the different variants of Acehnese (Kreemer 1931).

Most Acehnese manuscripts were written in Jawi (Jawoe) or variant Arabic scripts and later were converted to the roman script by Europeans. In present Acehnese writing, diacritics are still added to pronounce special characters of Acehnese such as the acute, grave, diaeresis and circumflex. These marks have evolved over a long period and were also applied for the romanization of toponyms in the past (Hanoum 1986).

The first detailed map of Aceh could be traced back to 1883s *Kaart van Noord Sumatra,* taken from the *Atlas der Nederlandsche bezittingen in Oost-Indië,* by Stemfoort and ten Siethoff. Minor diacritics such as the acute were added here to pronounce /ɜ/, e.g. Telok Semawé /təloʔ'sɯmawɜ/ and diaeresis above <e> as on Ritiëng /ritiəŋ/ and Telok-Kroët /təloʔ'kruət/, functioned to stress the previous syllable. This early romanization neglected nearly all basic Acehnese vowel sounds.

Table 1 Diacritic changes in Java

Maps	Sounds				Glottal Stop
	/ɔ/	/e/	/ɜ/	/ə/	
Title: Kaart van Java en Madura Year: 1850 Scale: 1:1,000,000 By: Le Clercq, A. J. Bogaerts, Breda	■ Purworedjo[a] ■ Progo[c] ■ Sindoro[d]	■ Telamoijo[d]	■ Klatten[a] ■ Sewoe[d] ■ Bawen[b] ■ Idjin[d]	■ Magelang[a] ■ Merapi[d]	*Not detected*
Title: Java Year: 1890 Scale: 1:1,000,000 By: E. de Geest, Seyffardt, Amsterdam	■ Poerworedjo ■ Boroboedoer[b] ■ Progo ■ Sindoro	■ Télomojo	■ Klatèn ■ Sèwoe ■ Bawen ■ Idjèn	■ Sĕmarang[a] ■ Magĕlang ■ Mĕrapi ■ Gĕnĕng[c]	■ Kraksaän[b] ■ Pĕtjangaän[b]
Title: Java en Madoera Year: 1905 Scale: 1:500,000 By: Topographisch Bureau, Batavia	■ Poerworĕdjo ■ Båråboedoer ■ Prågå ■ Sĕndoro	■ Telåmåjå	■ Klaten ■ Bawen ■ Idjen	■ Sĕmarang ■ Magĕlang ■ Mĕrapi ■ Kĕning	■ Petjangakan ■ Pandakan ■ Oendakan[b] ■ Pĕnandjaän[d]
Title: Midden-Java—Middle Java Year: 1930 Scale: 1:250,000 By: Topographische Dienst, Batavia	■ Poerworedjo ■ Boroboedoer ■ Progo ■ Soendoro		■ Klaten ■ Bawen ■ Idjen	■ Semarang ■ Magelang ■ Merapi	
Title: Java, Madura & Bali A.M.S. T521 (Second Edition) Sheet: Jogjakarta, Semarang, Rembang, Banjoewangi, Pasoeroean Year: 1945 Scale: 1:250,000 By: Army Map Service	■ Poerworedjo ■ Boroboedoer ■ Progo ■ Soendoro	■ Telomojo	■ Klaten ■ Bawen	■ Semarang ■ Magelang ■ Merapi ■ Geneng	■ Kraksaän ■ Petjangakan ■ Pandakan ■ Oendakan ■ Penandjakan
Standardized Toponyms (*until now*) with their IPA notation	■ Purworejo /pʊrwɔ'rədʒɔ/ ■ Borobudur /ʙɔrɔ'buɖʊr/ ■ Progo /pʳɔgɔ/ ■ Sindoro /sin'dɔrɔ/	■ Telomoyo /telɔ'mɔyɔ/	■ Klaten /kˡaʈɜn/ ■ Sewu /sɜwu/ ■ Bawen /ʙawɜn/ ■ Ijen /idʒɜn/	■ Semarang /səmaraŋ/ ■ Magelang /magəlaŋ/ ■ Merapi /mərapi/ ■ Geneng /gənəŋ/	■ Kraksaan /kʳak'saʔan/ ■ Pecangaan /pətʃa'ŋaʔan/ ■ Pandaan /pandaʔan/ ■ Undaan /undaʔan/ ■ Penanjakan /pənandʒaʔan/

Remarks [a]Main populated place; [b]Small populated places; [c]River; [d]Mountain

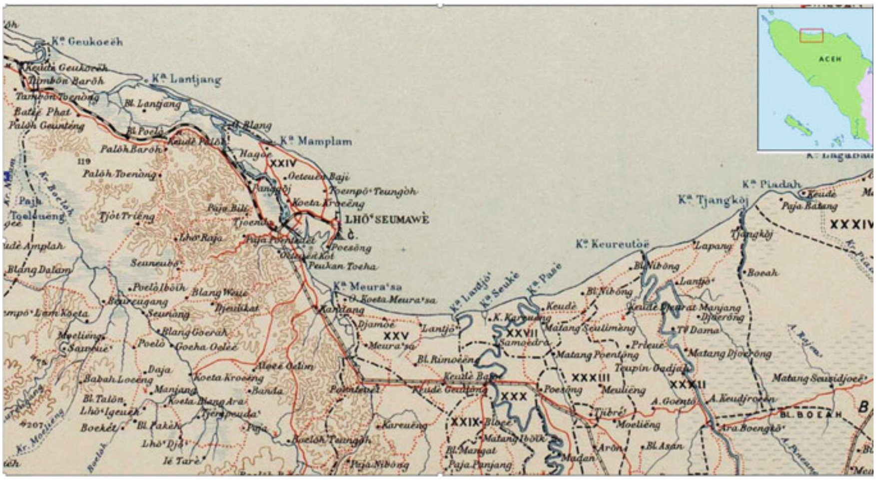

Fig. 3 Example of toponyms appearing on the *Overzichtskaart van Atjeh en Onderhoorigheden*, 1903, scale 1:500,000. *Source* http://maps.library.leiden.edu/

The Aceh map published in 1901, *Overzichtskaart van Atjeh en Onderhoorigheden*, had added more diacritics. The grave was used to pronounce /ə/ and /ɔ/ if it was placed above <e> and <o>, respectively. For example, Ulèë Lheuë /uleə’l^{h}ɯə/ and L.Nò (Lam Nò) /lam’nɔ/. The diaeresis also functioned to indicate diphthongs as on Ibōïh /iboɪɦ/. The macron was also first appeared to represent the sound /o/ as on Lhōng /l^{h}oŋ/. The glottal stop was marked by a reversed glottal stop sign <ˁ> after the vowel as can be seen in Lhōˁ Seumawè /l^{h}oʔ’sɯmawe/.

There was no significant change in diacritics when the next edition of this map, with the same title, was published in 1903. The breve was added to indicate the sound /ə/ for toponyms of Malay origin. For example, Telaga Toedjōh (1901) was replaced by Tĕlaga Toedjōh (1903) /təlaga’ tudʒɔɦ/. In addition, there were minor corrections for some toponyms on behalf of their pronunciation, for example Bireum (1901) was replaced by Bireuën (1903) (see Figs. 3 and 4).

This writing system was applied and lasted until in 1928 the map *Ondernemings en Overzichtskaart van het Eiland Sumatra* was published. It neglected almost all diacritics except the diaeresis, used either to stress the previous vowel or to divide it from the adjacent vowel. <k> was used as glottal stop instead of <ˁ>. From this time onwards, no directives were added on the pronunciation of complex vowels, for non-Acehnese speakers.

In 1943 and 1944, two topographic maps, in English, were published: A.M.S. T115 (1943) by the US Army Map Service and Topographic Map of Asia (1944) by the Survey of India Office. Compiled from Dutch previously published maps, the

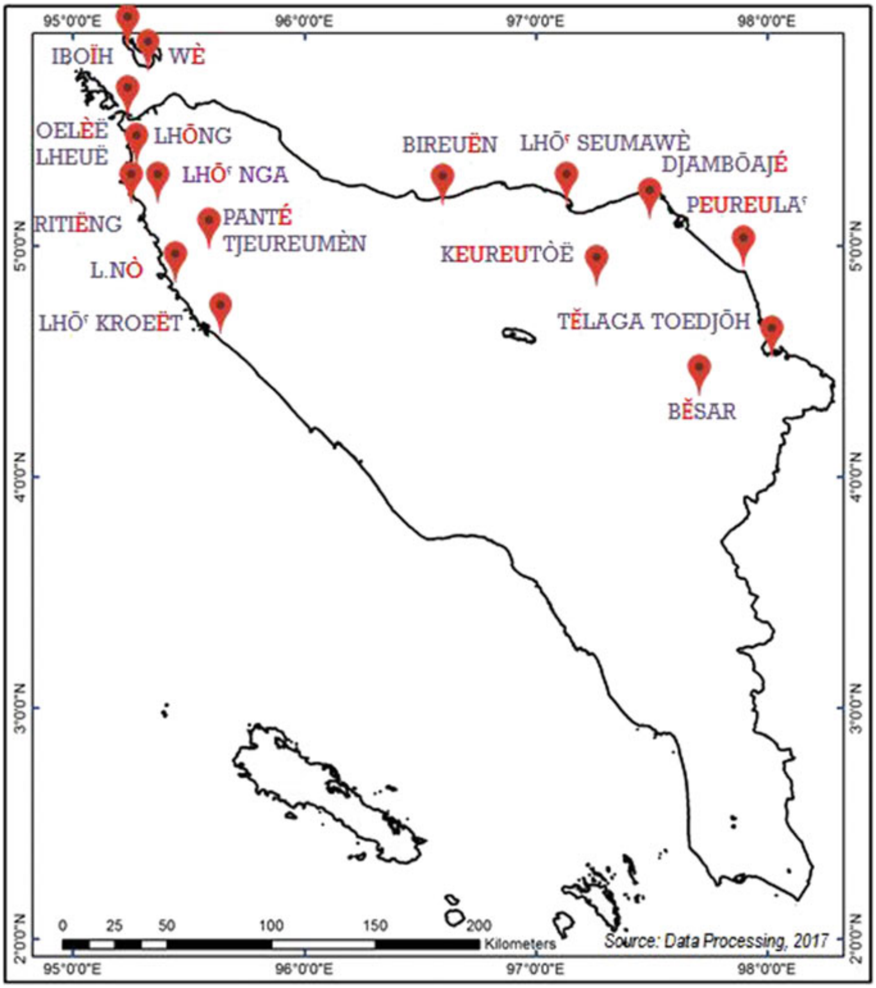

Fig. 4 Location of selected toponyms appearing on 1903 map of Atjeh (Fig. 3)

use of diacritics was inconsistently simplified. Several diacritics were re-established: acute, grave, macron, breve and diaeresis re-appeared on the map, e.g. Djerneh (1943) became Djĕrnéh (1944) /dʒərnɜɦ/, Peuneulet-baroh (1943) became Peuneulét Barōh (1944) /pɯnɯlɜt barɔɦ/, Meureudoè (1943) became Meureudoe (1944), Meukò (1943) became Meuko (1944) /mɯkɔ/ and Oleëgadjah (1943 and 1944).

Table 2 Diacritics changes in Aceh

Map	Sounds						Glottal stop	Diaeresis
	/o/	/ɔ/	/e/	/ɜ/	/ə/	/ɯ/		
Title: Kaart van Noord Sumatra Year: 1883 Scale: 1:900,000	■ Loong[a]	■ Lamnoha	■ Oleh Leh[a] ■ Wai[d]	■ Djamboeajer[b]	*Not detected*	■ Perlak[a] ■ Kerti[b]	■ Telok Semawé[a]	■ Ritiëng[a] ■ Telok-Kroët[a]
Title: Overzichtskaart van Atjeh en Onderhoorigheden Year: 1901 Scale: 1:500,000 By: Topographische Bureau, Batavia	■ Lhōng ■ Lhōˁ Nga[a]	■ L.Nò	■ Oelèë Lheuë ■ Wè	■ Djamboe Ajé ■ Panté Tjeureumèn	■ P. Tĕlaga Toedjōh Bĕsar[c]	■ Peureulaˁ ■ Keureutòë	■ Lhōˁ Seumawè	■ Ritiëng ■ Ibōïh[a] ■ Lhōˁ Kroeët ■ Bireum[a]
Title: Overzichtskaart van Atjèh en Onderhoorigheden Year: 1903 Scale: 1:200,000 By: Topographische Bureau, Batavia	■ Lhōng ■ Lhōˁ Nga	■ L.Nò	■ Oelèë Lheuë ■ Wè	■ Djambō Ajé ■ Panté Tjeureumèn[a]	■ P. Tĕlaga Toedjōh ■ Bĕsar	■ Peureulaˁ ■ Keureutòë	■ Lhōˁ Seumawè	■ Ritiëng ■ Ibōïh ■ Lhōˁ Kroeët ■ Bireuën
Title: Sumatra A.M.S. T511 (Advance Edition) Sheet: Lhokseumawe, Idi, Bireuen, Koetaradja, Tjalang Year: 1943 Scale: 1:250,000 By: Army Map Service, Washington, D.C.	■ Lhoknga		■ We	■ Djamboaje	■ Telagatoedjoeh ■ Besar	■ Peureulak ■ Keureutoe	■ Lhokseumawe	■ Lhō Kroeët ■ Bireuen
Title: Asia Year: 1944 Scale: 1:500,000 Sheet: Koetaradja, Lhokseumawe Compiled and Drawn by the Survey of India Office 1st Edition 1944	■ Lhong ■ Lhoknga	■ Lamno	■ We	■ Djamboaje	*Not detected*	■ Peureulak ■ Keureutoe	■ Lhokseumawe	■ Iboih ■ Lhokkroeët ■ Bireuen
Standardized Name (*until now*)	■ Lhoong /lʰoŋ/ ■ Lhoknga /lʰoʔŋa/	■ Lamno /lam'nɔ/	■ Ulee Lheue /ule' lʰɯə/ ■ We /we/	■ Jambo Aye /dʒambo'ajɜ/ ■ Pante Ceureumen /pante' tʃɯrɯmɜn/	■ Telaga Tujuh /təlaga' tudʒəɦ/ ■ Besar /bəsar/	■ Peureulak /pɯrɯlaʔ/ ■ Keureuteu / kɯrɯtɯə/	■ Lhokseumawe /lʰoʔ'sɯmawe/	■ Ritieng /ritiəŋ/ ■ Iboih /iboɪɦ/ ■ Lhokkruet /lʰoʔ'kruət/ ■ Bireuen

Remarks [a]Populated Place; [b]River; [c]Mountain; [d]Island

The complexity of Acehnese words, as represented by its toponyms, necessitates more pronunciation efforts from non-native speakers, even when embedded within local communities, to pronounce them well. Although it will be hard to apply nationally, diacritics are needed for Acehnese. However, regionally, the use of diacritics had been sanctioned by custom in romanized Acehnese script in giving spelling directions. The loss of correct pronunciation could mean the loss of the intangible asset of the language itself, which might happen in the near future due to the decline of information accepted by the next generation (Hanoum 1986; Wildan 2010) (see Table 2).

2.3 Nias

Nias (Li Niha) is a language spoken in Nias Island along with its 130 adjacent islands. Due to its isolated location, off the west coast of North Sumatra, Nias is very distinct, compared to mainland Sumatra. Nias has five major dialects: North, Central, West, South and Gunungsitoli. The first comprehensive Nias linguistic study was conducted by the German missionary Heinrich Sundermann. He published his first Nias-German dictionary in 1892 after his research in Nias (Brown 2001).

A special characteristic of modern Nias texts is the use of the diaeresis or umlaut <ö>, a common character in German orthography. It is used to pronounce the simple /ɘ/ instead of <e> as in *Bahasa Indonesia*. Sometimes, alternatively, it is replaced by a tilde <õ>. The use of circumflex <ŵ> is another orthographic characteristic of Nias. It is used to differentiate the voiced bilabial fricative sound /β/ from a voiced labial-velar approximant sound /w/, found in the language. Typically in Nias texts, plain <w> is used to represent these distinct sounds (Gulo 2014). The uniqueness of Nias has challenged cartographers in mapping local toponyms. There would be many diacritics added.

The first detailed map of Nias, the *Kaart van het Eiland Nias*, was produced in 1857 by the German-born naturalist and cartographer, H. C. B. von Rosenberg and printed by the army in Batavia. This map contained no diacritics.

In 1887, on a map entitled *Kaart der Bataklanden en van het Eiland Nijas*, a tilde was added <õ>, to render the sound /ø/. The legend mentioned that <õ> had the same sound as ‘eu’ in Dutch. However, this rule was revised in 1910. For toponyms of Malay origin, <ĕ> was still used to render the sound /ə/, as in Gidõ Kĕtjil /gidœ ‘kɘtʃil/ where <Gidõ> was of Nias and <Kĕtjil> was of Malay origin.

The *Schetskaart van het Eiland Nias*, by E. E. W. G. Schröder, printed in 1910, contained the most complex diacritics ever applied since the first map was published. Most vowels were typed with a combination of either macron, acute, grave or breve. They were <ā> /a:/, <à> /a/, <ē> /e:/, <è> /ɛ/, <ĕ> /ə/, <ō> /o:/, <ò> /ɔ/, <ù> /u/, <ì> /i/, and <ī̄> /i:/. The apostrophe was used as glottal stop and a circumflex accent (̭) could be inserted below any vowels, for stressing the sound. For example, Òmbĕlā̭tā /ombɘ’la:ɘta:/. However, in pronunciation nowadays, the

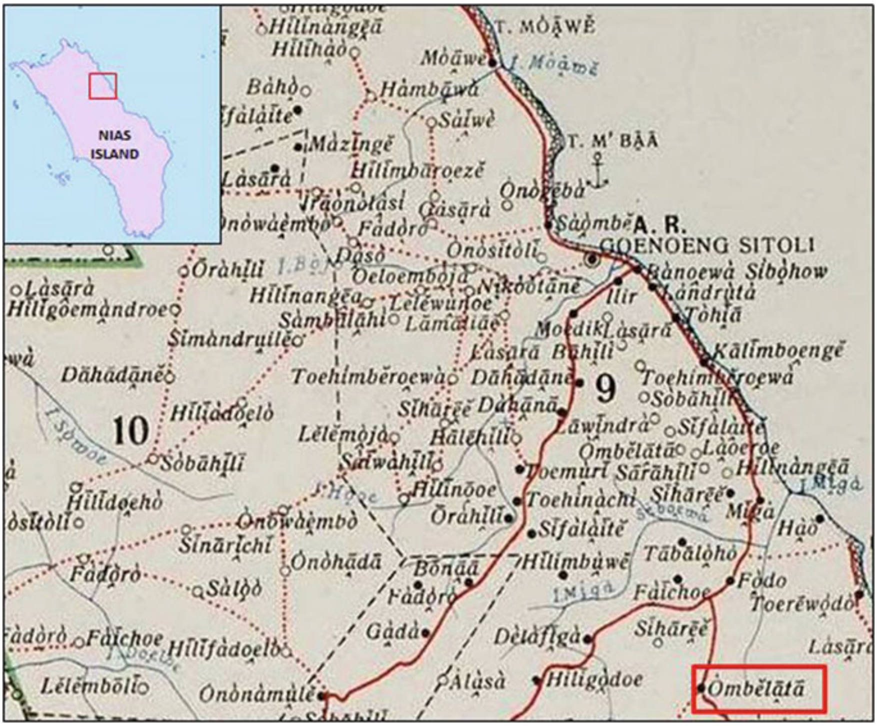

Fig. 5 Example of toponyms appeared on *Schetskaart van het Eiland Nijas*, 1910, scale 1:150,000. Source: http://maps.library.leiden.edu

young generation sometimes neglects stressing the word and shortens the pronunciation (Figs. 5 and 6).

Diacritic changing was occurred on the updated 1917 edition of this map, *Schetskaart van het Eiland Nias (behoort tot de residentie Tapanoeli)*. Macrons were omitted and no diacritics added to pronounce simple /a/, /e/, /o/ and /u/. The grave was kept but for the vowel <i>, /i/ was represented by <ė̀> and no more as <ì> as on 1910 version. Replacements were also occurred by adding tildes, double acutes, and diaereses above <o>, e.g. <õ> /ə/, <ő> /ø/ and <ö> /u/. Reversed glottal stop sign <ˁ> was used instead of apostrophe, e.g. Mbaˁa /ʙaʔa/. Stressed vowels were still preserved by putting a circumflex accent below the letter as on the previous version of the map. The spelling of several toponyms was corrected. For example, the recently simplified toponym Ononamolo /ono'naməlǝ/, on the 1910 map, it was written as Ònònàmṷlĕ /ɔnɔ'namu:lə/ and became Ononamőlõ / ono'namø:lə/ in 1917.

The second edition of the U.S. Army topographic map of Nias was produced in 1944, by a compilation of previously published Dutch maps. Diacritics sometimes were put in inappropriate ways.

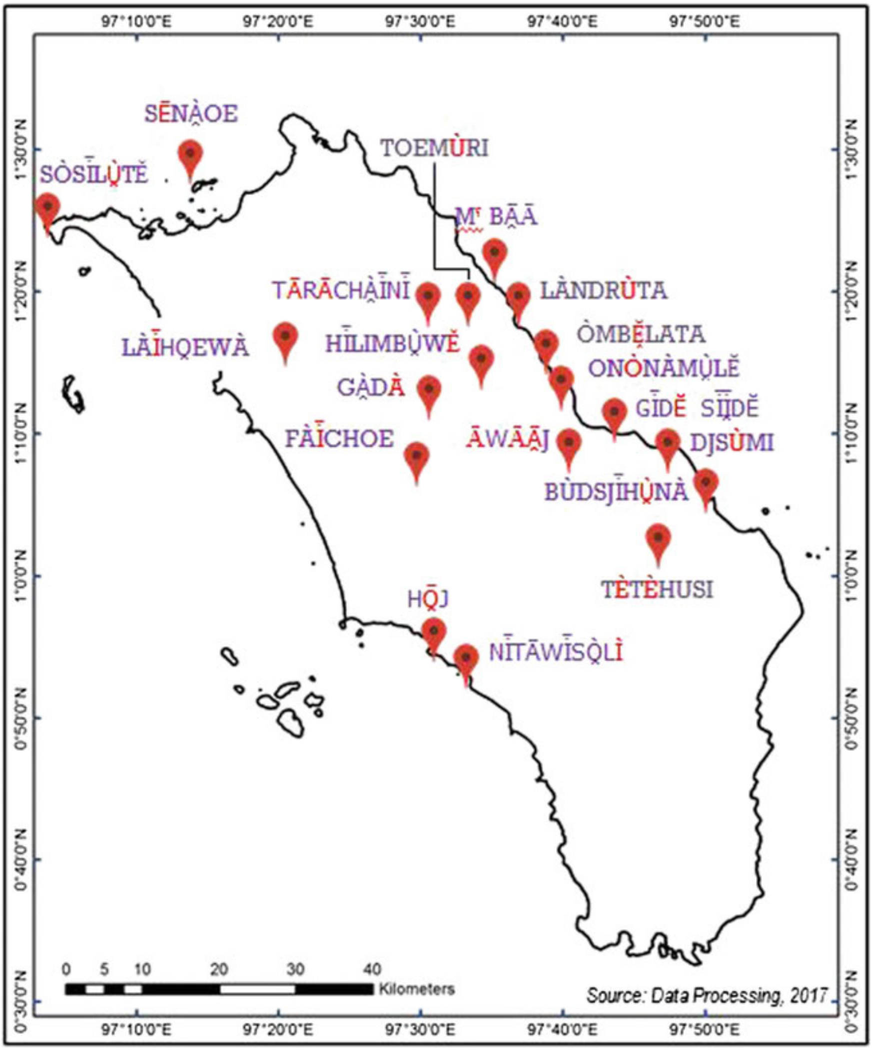

Fig. 6 Location of selected toponyms appearing on the 1910 map of Nias

In modern Nias orthography, the recent generation recognizes six main vowels: a /a/; i /i/; u /u/; o /o/; e /e/ and ö /ə/. Recently, on official Indonesian maps, all diacritics have been removed. Non-native speakers have no more clue how to pronounce the toponyms properly. Moreover, since the diaeresis is omitted for standardized Nias toponym, they cannot distinguish the pronunciation of <o> as /o/ from /ə/. For example, Ononamolo should be pronounced as /ononamɤlɤ/ and it is not common for almost all Indonesians to pronounce <o> as /ə/ (Table 3).

Table 3 Diacritic changes in Nias

Maps	Sounds					Glottal Stop
	/a/	/e/	/o/	/ɤ/		
Title: *Kaart van het Eiland Nias* Year: 1857 Scale: 1:250,000 By: H. C. B. von Rosenberg, Printed by Genie (Corps of Engineers), Batavia				■ Gido Kitjil[a] ■ Ombalatta[a] ■ Landater[a]	■ Botjihona[a]	
Title: *Kaart der Bataklanden en van het Eiland Nijas* Year: 1890, surveyed in 1887 Scale: 1:200,000 By: F. J. Haver Droeze Topographisch Bureau, Batavia		■ Sanaoe[b]	■ Ononamõlõ[a]	■ Gidõ Kĕtjil (Gidõ Side Ide) ■ Landata ■ Djomi[a]	■ Bõzihõna ■ Hili Mbõwõ[a]	
Title: *Schetskaart van het Eiland Nias* Year: 1910 Scale: 1:150,000 By: E. E. W. G. Schröder Topographische Inrichting, Batavia	■ Āwāāj[a] ■ Tārāchā̯ī̯nī[a] ■ Gà̯dà[a]	■ Sēnà̯oe ■ Tètèhusi[a] ■ Nītāwīsò̯li[c] ■ Lāīhœ̯wàa ■ Fāīchoe[a]	■ Ònònàmù̯lĕ ■ Sòsīlù̯tĕ[c] ■ Hōj[c]	■ Gīdĕ Sīī̯dĕ ■ Làndrùta ■ Toemùri ■ Dsjù̯mi	■ Bùdsjīhù̯nà ■ Hīlimbù̯wĕ ■ Ombĕlata	■ Mˁ bā̯ā[c]
Title: *Kaart Aangevend De Bestaande – en Voorgestelde Grenzen der Bestuursressorten op het Eiland Nias* Year: 1917 Scale: 1:150,000	■ Awaˁaj ■ Taraghà̯inõ ■ Hiligàdà	■ Senà̯u ■ Tètèhösi ■ Nitawisolė́ ■ Làèhuwà ■ Fà̯ighu	■ Onònàmṓlõ ■ Sòsilötõ ■ Hoj	■ Gidõsiˁi̯dõ ■ Landrṓtà ■ Tumṓri ■ Dsjömi	■ Bödsjihönà ■ Hilimbṓwõ ■ Ombõlata	■ Mba̯ˁa
Title: *Sumatra* A.M.S. T511 (Second edition) Sheet: Goenoengsitoli Year: 1944 Scale: 1:250,000 By: Army Map Service, Washington, D.C.	■ Awaäj	■ Senaoe ■ Nitawisòle ■ Làèhuwà ■ Fà̯ighu	■ Ononàmölő ■ Sòsilötö ■ Hoj	■ Gidõsi̯ˁidõ ■ Tumöri ■ Dsjeumi	■ Bödsjihönà ■ Ombõlata	■ M'ba̯ˁa
Standardized Toponyms (*until now*) with their IPA notation	■ Awa'ai /awaʔaɪ/ ■ Tarakhaini /taraxaini/ ■ Gada /gada/	■ Senau /senau/ ■ Tetehosi /tetehɤsi/ ■ Nitawisole? /nitawisole/ ■ Laehuwa /laehuwa/ ■ Faekhu /faexu/	■ Ononamolo /ononamɤlɤ/ ■ Sosiloto? /sosilɤtɤ/ ■ Hoi? /hoɪ/	■ Gido Siide /gidɤ'siʔide/ ■ Landrota /land[r]ɤta/ ■ Tumori /tumɤri/ ■ Somi /sɤmi/	■ Bozihona /bɤzihɤna/ ■ Hilimbowo /hili'ʙɤwɤ/ ■ Ombolata /o'ʙɤlata/	■ Mbaa /ʙaʔa/

Remarks [a]Populated place; [b]Island; [c]Cape

During colonial mapping, each region in the Dutch East Indies had its own orthographic rules in writing toponyms (Wells 2000). What was used in Java was different from other region that had different languages. The lack of standardization made map users face misconception in interpreting the additional signs put around the letters. Moreover, diacritics were sometimes changed in extreme ways for unclear reason. Changes as from acutes to graves and from tildes to diaereses might be indicative of either pronunciation shifts, corrections by the cartographers, restrictive typing instruments or even changes in the political constellation. However, the reason of diacritics abolition as shown on Javanese topographic maps toponyms in 1930 was unknown. More research is needed for it because from this time diacritics were no more appeared in Indonesian toponyms.

Furthermore, in 2016, when on the 4th Edition of General Guidance for *Bahasa Indonesia* Spelling System that allowed diacritics in limited use (Tim Pengembang Pedoman *Bahasa Indonesia* 2016), was published, the Minister of Home Affairs Decree No. 39/2008 that prohibit diacritics on toponyms, should be reviewed. In nowadays condition, the orthography of *Bahasa Indonesia* and other local languages is written in their simplest way neglecting their original pronunciation. They did insufficiently realize that it would affect the pronunciation for future generations.

Synchronization between standardized toponyms and IPA could be elaborated by the Indonesian Government. A new regulation might be issued to enclose IPA on Indonesian gazetteer. Once IPA has been regulated on Minister of Home Affairs Decree No. 39/2008, detailed technical guidance of using IPA is urgently needed. Otherwise, IPA, a pronunciation bridge among speakers, would not be applied properly. The implication is the Indonesian Government should educate the citizens to learn IPA. They should socialize its importance as tool to preserve the original pronunciation of toponyms from all languages living in Indonesia.

3 Conclusions

Nias toponyms had the most complex diacritic rules as compared to any other languages in the archipelago. Cartographers needed much effort to decide what appropriate signs to put on. Without reading the directives in the legend section, map users surely had no idea how to pronounce the toponyms as the locals did. The diacritics adhered to Nias toponyms were very hard to type. After the omission of the diacritics, the complexity of the pronunciation of the Nias language was no longer recognized by foreign speakers.

Even though the diacritics used for rendering Acehnese toponyms were less complex than those of Nias, they were not fully represented on Dutch maps. Acehnese which contains ten basic monophthongs, vowel sounds in which the tongue stays in one position (Cambridge University Press 2018), is not commonly used in basic pronunciation of *Bahasa Indonesia* and hard to represent by the standardized Indonesian spelling system. To preserve the legacy of correct pronunciation of Acehnese toponyms, breaking the rules of national standardized spelling system might be the solution applied to today's Acehnese texts.

Javanese toponyms contained the simplest diacritics as compared to those in the Nias and Acehnese languages. Without diacritics, Javanese people still might understand their place names when pronounced by foreign speakers because the possibility of mispronunciation is lower.

The main conclusions can be expressed as follows:

- Pronunciation of recent Indonesian toponyms is spelled in a homogenous way, based on the 1972 Perfected Spelling System where combining Latin alphabet characters with diacritics, is hard to apply. Moreover, the Minister of Home Affairs Decree No. 39/2008 concerning General Guide for Topographical Names Standardization prevents the use of diacritics for all romanized Indonesian toponyms. However, Indonesia consists of hundreds of native languages that may have different phonemes that cannot be expressed with standard *Bahasa Indonesia*.
- Diacritics added to toponyms on Dutch maps produced during colonial period did preserve the original pronunciation of native languages. The removal of diacritics since 1972 may cause pronunciation changes for present and future generations. Misconception between local and foreign speakers might be problems where there is no bridge to unify the understanding of common pronunciation.
- Synchronization with IPA writing system, either in local texts or toponyms, must be communicated through the social media by the Indonesian Government, in order to maintain this local intangible heritage.

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Buginese Charts: Typical Cartographic Encounters Between East and West?

Marco van Egmond

Abstract One of the undisputed highlights of the Utrecht University map collection concerns a big chart on vellum of the East Indian Archipelago written in Buginese (shelf mark: VIII.C.a.2). Nowadays three copies of Buginese charts of the archipelago are known from literature worldwide. The Buginese charts provide an overview of the trade area of the Buginese and Makassar peoples, who have been known of old as the sailors of the archipelago. So far it was generally thought that the Buginese charts were made by indigenous cartographers, using older Western sources like the charts patented in the name of the Dutch East India Company. Furthermore, the assumption has been made that the Buginese produced either a standard model for their charts or copied each map after the other. Can these hypotheses still survive? Currently we have a tremendous on-line reservoir of digitized old maps and charts at our disposal. And we can also take advantage of modern techniques like digital accuracy analyses. With the help of this relatively new digital potential and science the content and possible sources of the Buginese charts are critically examined. By doing this, special attention will be paid to the Utrecht copy.

1 Introduction

One of the most remarkable charts from the collection of Utrecht University Library is an early nineteenth-century chart of the East Indian Archipelago in the Buginese language. Up till now the literature assumes that the map is mainly based on a compilation of seventeenth- and eighteenth-century Dutch sources by one or more Buginese cartographers. However, the early authors in the field of Buginese charts did not have the disposal of modern digital techniques supporting map accuracy as we have today. Neither could they make use of an extensive and accessible dataset

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of digitised old maps on the internet. What can we tell nowadays about the origin of the Buginese chart, now that we have accuracy techniques and digital availability? On what cartographic sources are these charts based? And were the indigenous Buginese chart makers really capable of compiling a new chart based on these sources?

1.1 Characteristics

The Buginese chart from the Utrecht collection can hardly be overlooked (illustration 1).[1] Hand drawn on vellum (skin from a sapi, an Indian cow) and measuring 76 by 105 cm, it offers a fine cartographic representation of the East Indian Archipelago. On a system of rhumb lines with two compass roses, the chart shows the contours of numerous islands. The geographical charted area stretches from the Nicobar and Andaman Islands in the west to Ceram Island in the east. The Philippines and a large area of mainland Southeast Asia are depicted in the north and a small part of Australia is included in the south. Almost all information on the chart is related to sea navigation. For instance, large parts of the coasts include mountain profiles as visual reference, with volcanoes as they appear from the sea. Shallows, sand banks, shoals, reefs, and soundings are also included in detail. Estuaries and bays are exaggerated and depicted on a larger scale (Fig. 1).

1.2 Buginese Toponyms

In several places, flags indicate the presence of various European rulers. Curiously enough, the island of Luzon on the Philippines has a Dutch flag, although the Dutch never held power there!

The manuscript map contains a wealth of toponyms, all in Buginese characters and many with clear and specific Buginese names.[2] Also many soundings are included which are however represented in Western style Arab figures. These soundings appear not everywhere, just in the Java Sea and along the western Lesser Sunda isles.

Originally Buginese (Basa Usi) is an Austronesian language which was mainly spoken on the southern part of the Indonesian island of Celebes. The Dutch colonisation led to a proportion of the Buginese population migrating to other parts of Indonesia. The chart shows—hardly visible left middle—a date in Buginese

[1] Utrecht University Library, call number: Kaart: *VIII*.C.a.2.

[2] See Le Roux (1935: 704–714) for an extensive list and transcription of geographical names, appearing on the Buginese charts from Utrecht, Madrid, and Batavia.

Fig. 1 Buginese chart of the East Indian Archipelago, 1816, Utrecht University Library, Kaart: *VIII*.C.a.2

lettering which refers to the Islamic Hijra year numbering system: A.H. 1231, which corresponds to the year 1816.[3]

2 Comparable Charts

The Utrecht copy of the Buginese chart does not stand alone. It is certain that there are two other comparable hand-drawn Buginese charts on vellum in the world. Le Roux (1935),[4] whose publication convincingly shows the importance of older literature in historical cartography, first mentions a copy in the Museo Naval in Madrid from around 1820 (illustration 2). In addition, his article includes a detailed reproduction of a Buginese chart from the former collection of the Koninklijk Bataviaasch Genootschap van Kunsten en Wetenschappen, nowadays in the National Library of Indonesia (illustration 3). Le Roux dates this chart, of which he has not seen the original, back to 1828. He also cites Matthes (1875) who is said to have mentioned the whereabouts of two or more supposedly Buginese charts of the

[3]Le Roux (1935: 694–695).

[4]Le Roux (1935: 687–689).

East Indian Archipelago.[5] Elsewhere Matthes (1875: 99) mentions under letter "G Bibliotheca Marsdeniana Londen": "Charts of the Eastern Archipelago, with the Names of places written in the Bûgis character (given to me by Capt. Thomas Forrest)." This library, belonging to the orientalist William Marsden (1754–1836) is currently housed in the London King's College; see: http://www.kcl.ac.uk/library/archivespec/special-collections/Individualcollections/marsden.aspx (July 2017). At the time, Le Roux didn't find these maps and also a recent search in the online catalogue of King's College yielded no hits. It is questionable if specific Buginese overview charts of the whole archipelago are concerned. Perhaps these maps show smaller regions? Up till now, there has been no trace of these maps mentioned by Matthes. In short: of three Buginese charts of the East Indian Archipelago we actually know their contents, either of the original ones (Utrecht and Madrid) or the reproduced one (Batavia, now Jakarta). The following analysis is based on a study of these three charts (Fig. 2).

2.1 Similarities

As said before, the Buginese charts from Utrecht, Madrid and Batavia/Jakarta are comparable. They have a lot in common. For instance, the three maps have no degrees, are meant for maritime use, show a fairly identical cartographic image including mountain profiles and an exaggerated representation of bays and estuaries, have Buginese script, date from the first half of the nineteenth century, and are on a scale of circa 1:4,500,000. The Buginese charts have an indigenous origin[6] and give an overview of the East Indian Archipelago, the trading area of the Makassar and the Buginese people, traditionally the sea carriers of the archipelago with Makassar as entrepôt for the trepang fishery. The provenance of two of the three charts is also of exceptional importance. The Madrid copy comes from a Philippine pirate ship that was taken by force, whereas the 'Batavia' copy is known to have

[5]Matthes (1875: 84): "Eindelijk heeft men bij de verzameling van het Nederlandsch Bijbelgenootschap ook nog eene kaart van Nederlandsch Oost-Indie, waarop de namen hier en daar met Makassaarsche letters geschreven zijn". Le Roux couldn't find a trace of this map. Also, a recent inquiry at Leiden University Library—where the collection of the Nederlands Bijbelgenootschap is housed nowadays—didn't yield anything. However, the tiny description doesn't necessarily mean an indigenous map.

[6]Le Roux (1935: 702): "[…] wij [kunnen] de onderwerpelijke kaarten met een gerust hart geheel als Inlandsch teekenwerk qualificeeren. […] de geheele wijze van teekenen, bij de Bataviasche op een sapi-huid, [is] naar ons gevoelen Inlandsch. De voorstelling van de schalen en de stoomboot, de fouten in de weergave van den staatkundigen toestand en de zeer gepiononceerde teekening van de riviermonden, baaien en inhammen, wijzen eveneens op het werk van een inlander. Bovenal echter laat de Beschrijving in Boegineesche karakters en met verschillende typische Boegineesche karakters en met verschillende typische Boegineesche namen geen anderen uitleg toe".

Fig. 2 Buginese chart of the East Indian Archipelago, ca. 1820, Madrid, Museo Naval

been found in a pirate's nest on Sumatra.[7] Furthermore, Le Roux (1935: 687) quotes the text on the reverse side of the Batavia copy: "Boegineesche zeekaart gevonden in de zeerover kampong Santhel in de baai van Sekana, eiland Sinkep, den 5 July 1859 door J. H. G. Jordens". At the time, Johan Hendrik George Jordens was lieutenant at sea first class and commander of the ship 'Merapi', used to combat piracy in the waters of Riouw and Lingga. Unfortunately, the provenance of the Utrecht copy is shrouded in mist. Maybe it was also seized from Buginese seafarers and traders and used by indigenous pirates (Fig. 3).

[7]Wieder (1915: 196) writes about the Madrid chart: "In den catalogus van het Museo naval (No. 697) wordt hierbij aangeteekend dat deze kaart werd aangetroffen in het schip van een Philippijnschen zeeroover, dat in 1847 veroverd werd."

Furthermore, Le Roux (1935: 687) quotes the text on the reverse side of the Batavia copy: "Boegineesche zeekaart gevonden in de zeerover kampong Santhel in de baai van Sekana, eiland Sinkep, den 5 July 1859 door J.H.G. Jordens". At the time, Johan Hendrik George Jordens was lieutenant at sea first class and commander of the ship 'Merapi', used to combat piracy in the waters of Riouw and Lingga.

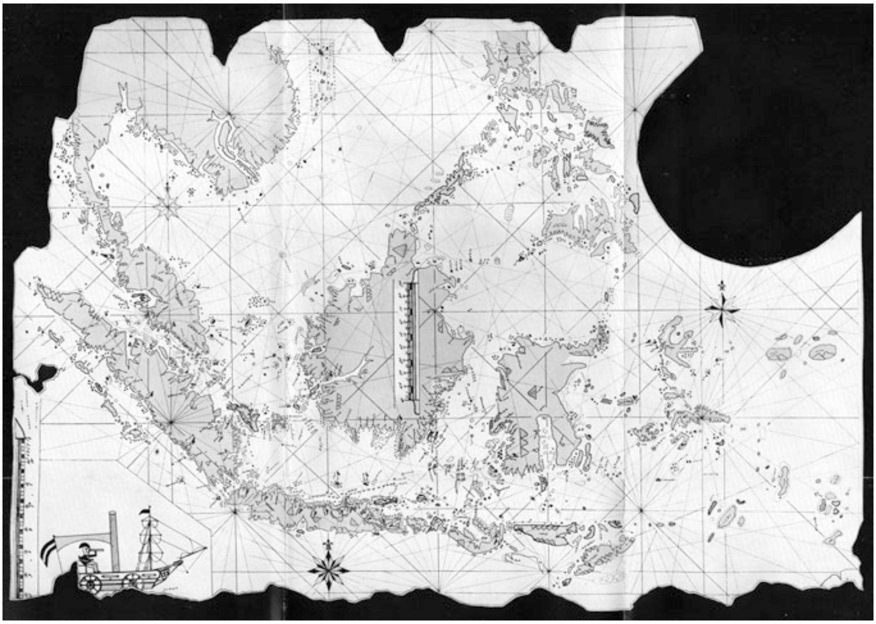

Fig. 3 Reproduction of a Buginese chart of the East Indian Archipelago, ca. 1828, former collection of the Koninklijk Bataviaasch Genootschap van Kunsten en Wetenschappen. Included in Le Roux (1935)

2.2 Differences

However, the three Buginese charts also differ from each other. Although each of the three maps has a network of rhumb lines, these networks are not identical, nor are the number of compass roses and their positions. Furthermore, the depicted geographical areas differ. In relation to the Utrecht chart, the Madrid copy with its measurements of 71.5 × 91.5 cm covers less area to the west. The same goes for the copy from Batavia, but that map measuring 75 by 105 cm stretches out further to the east, up to the Kai and Aru Islands. At the bottom left of the latter chart we find a picture of a paddle steamer.[8] However, the similarities far outweigh the differences. In other words: the charts are obviously related to each other, but how?

[8]Le Roux (1935: 693 and 694) uses this print of a paddle boat for an extensive examination of the dating of the chart.

3 Hypotheses

In his study on the Buginese charts, Le Roux advances some propositions which were later followed to a large extent by Schwartzberg (1994: 832–838). Two of Le Roux's major hypotheses are:

- The three charts show so many substantial and geodetic similarities that the indigenous cartographers must have used a standard model or they must have copied one chart to another.[9]
- The cartographic image of the three Buginese charts is based entirely on Western sources from the seventeenth and eighteenth centuries and is a compilation of various, particularly Dutch detailed charts of the East Indian Archipelago.[10]

Below these hypotheses will be further discussed and where possible tested with the help of accuracy techniques and the online availability of digitised old charts of the East Indian Archipelago.

3.1 *Identical Geometric Basis?*

So, the question if the indigenous chart makers used a standard model for their charts or if they copied them each time must in fact be preceded by the question to what extent did the three map images actually match. It's true that there are very obvious similarities with respect to design, topographical specifications and the use of symbols, but does this mean that there is an identical geometric basis? An accuracy analysis of the charts via *Mapanalyst*, an online program, provides the answer to this question.[11] Illustration 4 shows the results of this accuracy analysis for the three charts together, having used approximately 35 comparable reference points. The similarities are striking, both the distortion grid and the vector and circle

[9]Le Roux (1935: 702): "Het slechts in details verschillend kaartbeeld op de drie kaarten, doch met afwijkend net van kompaslijnen, wijst er ons inziens op, dat een standaardmodel gebruikt is, of dat de eene kaart van de andere is overgenomen."

[10]Le Roux (1935: 687): "Men behoeft maar weinig kennis te bezitten van de oude cartographie van den Archipel om op het eerste gezicht te ontwaren, dat de geheele voorstelling dezer kaart […] ontleend is aan Westersch kaartenmateriaal." Idem (p. 691): "Wij hebben hier te maken met een groote overzichtskaart, een echte portulano of zeekaart, welker voorstelling geheel terug gaat op een ouderwetsch 18e eeuwsch kaartbeeld. Alhoewel dit beeld in vele opzichten nog eenvoudig is, vertegenwoordigt het toch een vrij groote kennis van de kusten en eilanden." Idem (p. 697, 698): "Overzien wij het geheele hier behandelde kaartbeeld, dan lijdt het geen twijfel, dat daarin een groot deel van de cartografische kennis is verwerkt, welke door de oude Hollanders in het laatste kwart der 17e en de eerste helft der 18e eeuw werd verkregen. […]".

[11]Internet URL (July 2017): www.mapanalyst.org. This application determines the planimetric accuracy of old maps relative to a modern map.

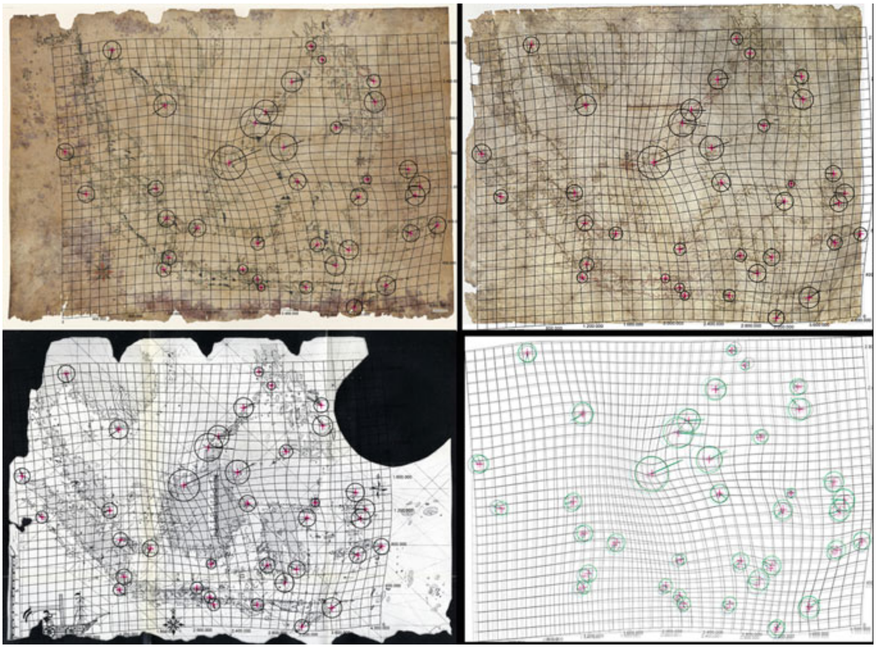

Fig. 4 Accuracy analysis of the Utrecht, Madrid, and Batavia copy of the Buginese chart of the East Indian Archipelago (*Source* Mapanalyst, Helmert 4 parameters)

displacements almost fully match given the divergent shrinkage of the vellum (Fig. 4).

3.2 Standard Model or Copy?

The accuracy analysis shows that the three Buginese nautical maps have a common geometric basis, confirming Le Roux's assumptions, although he was not sure if the Buginese chart makers used a standard model or if they copied the charts. The accuracy analysis does not answer this question. It is probable that a standard model with only the contours of all areas and islands of the archipelago was used, in which the size of the vellum determined the size of the charted area. Also, the differences in the network of rhumb lines and compass roses,[12] the sometimes-different positioning of the mountain profiles and scale bars and the addition of some decorations do not seem to indicate the haphazard copying of already existing charts (although it is conceivable that sometimes the charts were produced in series, showing greater

[12]This network of rhumb lines was added after drawing the geographical parts, as evidenced by the intermittent depiction of the loxodromes.

similarities with each other). The fact that the charts were taken aboard by the Buginese navigators also pleads in favour of a standard model which stayed behind in their land-based ‘cartographic workshop’, presumably in Makassar or surroundings.

3.3 Source Map(s)?

The second question in relation to the Buginese charts has to do with the origin of the source material which was used for the probable standard model. From a scholarly point of view there is consensus about the fact that the maps are for the larger part influenced by Western cartographic sources. Considering the representation of the topography and the rhumb lines, characteristic for the European charts from that period, there is indeed no reason to doubt this assumption. But what Western sources did the Buginese have at their disposal for producing their charts? Based on the study of old Dutch and English charts Le Roux mainly mentions indirect Dutch sources.[13] According to him these sources might be the large eighteenth-century sea atlas of the Amsterdam firm Van Keulen *Die nieuwe groote lichtende Zee-Fakkel*. Also, Gerrit de Haan’s manuscript atlas *Ligtende zee fakkel off de geheele Oost Indische waterweereldt* and various works by François Valentijn are regarded as indirect basis material. In addition, Le Roux suspects that Buginese chart makers had registered, patented VOC maps at their disposal.[14] The patented charts of the East India Company (VOC) were more exclusive than secret. Some seafarers treated this map material in a wrong way or sold these charts to foreign skippers (Zandvliet 1998: 128–131). So, it is quite possible that Buginese sailors could obtain patented VOC charts in this way.

3.4 Corpus of Digitised Old Maps

It is very much the question if the Buginese actually did have access to all cartographic knowledge mentioned above, as included in De Haan’s manuscript atlas for instance. Nevertheless Le Roux says that he searched in vain for an eighteenth-century overview map or prototype serving as a source for the Buginese

[13] Le Roux (1935: 695–697).

[14] Le Roux (1935: 701): “[…] wij zijn ervan overtuigd, dat ook menig Compagniesdienaar zich voor een zacht prijsje er toe geleend zal hebben om hun kaartenmateriaal, zij het dan waarschijnlijk slechts gedrukte atlaskaarten en geen afschriften van de geoctroyeerde geheime kaarten der V.O.C. te verschaffen. Toch zouden ook deze laatste hun wel bij verovering van het een of ander Compagniesschip in handen zijn gevallen.”

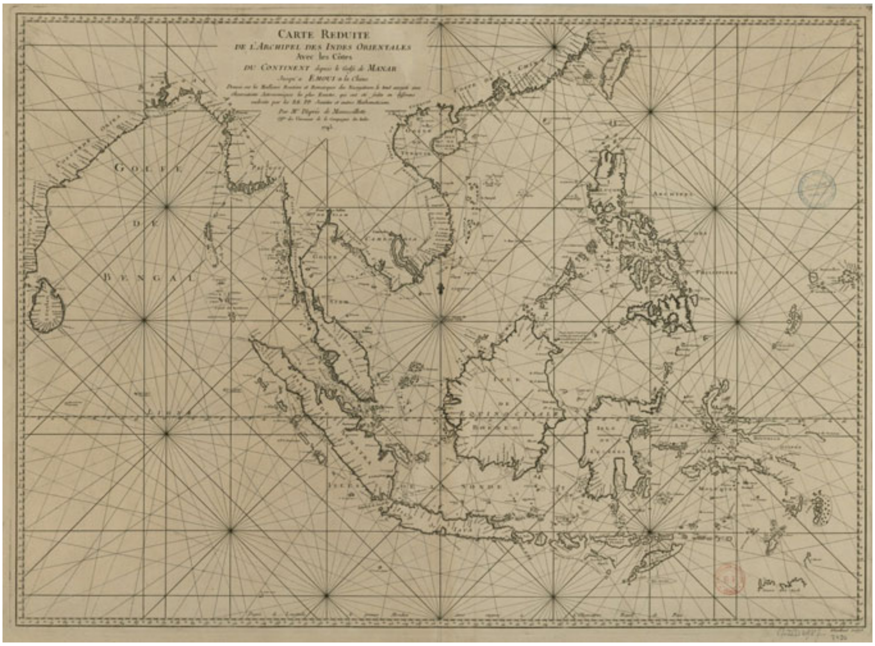

Fig. 5 Jean-Baptiste d’Après de Mannevillette, *Carte reduite de l’Archipel des Indes Orientales*, 1745, Bibliothèque Nationale de France in Paris [département Cartes et plans, CPL GE DD-2987 (7495 B)]

charts and next comes to the rather odd conclusion that ‘it must be so […] several [… Dutch] atlas and manuscript maps served as an example in making the maps’.[15] However, at the time he limited his search to Dutch and English map material from some Dutch collections close to home[16]. Nowadays the map historians have an enormous corpus of digitised old maps and matching websites at their fingertips. Searching for sources for particular map images has become so much easier compared to almost a century ago. Among other websites, a search via Google Images soon led to eighteenth-century charts made in France. And precisely these French maps, coming from the Dépôt de la Marine and specifically the ones from hydrographer and cartographer Jean-Baptiste d’Après de Mannevillette (1707–1780), Le Roux did not include in his study (Fig. 5).

[15]Le Roux (1935: 698): “dus […] verschillende [… Nederlandse] atlas-en manuscriptkaarten bij de vervaardiging als voorbeeld hebben gediend”.

[16]Specifically, the collections of the National Archives in The Hague, the Maritime Museum in Amsterdam, and the Royal Geographical Society in Amsterdam (KNAG).

4 French Influence?

In the eighteenth century, the French maritime cartography played a major part in the modern, systematic and precise mapping, produced by authority of the state, of the worldwide oceans and coasts.[17] As captain of a ship of the French East Indian Company D'Après de Mannevillette undertook many expeditions to the East and as one of the pioneers used an octant for measurements at sea.[18] He made all kinds of charts of Southeast Asia and the East Indian Archipelago which he published, supported by the Paris Académie des Sciences, in an atlas titled *Le Neptune Oriental*. This atlas was used on board by all French ships and also by many foreign ones to navigate the Indian Ocean and the waters of Southeast Asia. The atlas also contains a fairly large overview map of the archipelago, the *Carte reduite de l'Archipel des Indes Orientales* (illustration 5).[19] At first sight, this map, measuring 63 × 90 cm, bears a strong resemblance to the Buginese charts. Could it have been the source map for the indigenous cartographers?

4.1 The Carte Reduite de L'Archipel Des Indes Orientales *Compared*

Anyway, a comparison of the chart by D'Après de Mannevillette with the three Buginese charts results in a number of cartographic similarities (illustration 6). For instance, the representation of the Mekong Delta is the same, as well as the one of the Menam Delta. The same goes for the Gulf of Martaban and the islands in the Andaman Sea. The depiction of the many islands of the Philippines, in those days hardly known and therefore a reason for various (mis)mappings is also fairly analogous to the depiction on the Buginese maps. The form of Celebes also matches, with an 'open' initial stage of the Gulf of Tomini which is identical to the representation on the Utrecht and Batavia copy. Finally, also the rough shapes of the other islands in the archipelago show large similarities. A comparison of an accuracy analysis of the map by D'Après de Mannevillette with the one of the Utrecht Buginese map shows, certainly as far as the distortion grid is concerned, quite a good resemblance (illustration 7). Concerning the transcribed toponyms provided by Le Roux, there are some similarities with the French source map. However, most of the geographical names seem to be derived from an indigenous, Buginese origin (Figs. 6, 7 and 8).

[17] Schilder & Kok (2010: 183).

[18] About D'Après de Mannevillette: Haudrère (1997) and (2014).

[19] A copy of this map, from the collection of the Bibliothèque Nationale de France in Paris (département Cartes et plans, CPL GE DD-2987 (7495 B)), is consulted online: http://gallica.bnf.fr/ark:/12148/btv1b5963231g.

(a)

(b)

Fig. 6 Comparison of the chart by D'Après de Mannevillette with the Utrecht, Madrid, and Batavia copy of the Buginese chart for the region of the Mekong Delta (**a**), the Philippines (**b**), and Celebes (**c**)

(c)

Fig. 6 (continued)

4.2 Complementary Source Maps?

So it looks like the Buginese chart makers made (direct or indirect?) use of the overview chart of D'Après de Mannevillette from 1745 for the outlines of the archipelago, drawing the bays and estuaries on an exaggerated scale and adding mountain profiles (perhaps taken over from the detailed charts in *Le Neptune Oriental*?). However, in relation to the representation of Borneo and the area around the Java Sea there is a striking difference with the French printed source map. On the Buginese maps, the large peninsula of Tanjung Mangkalihat (East Borneo) is

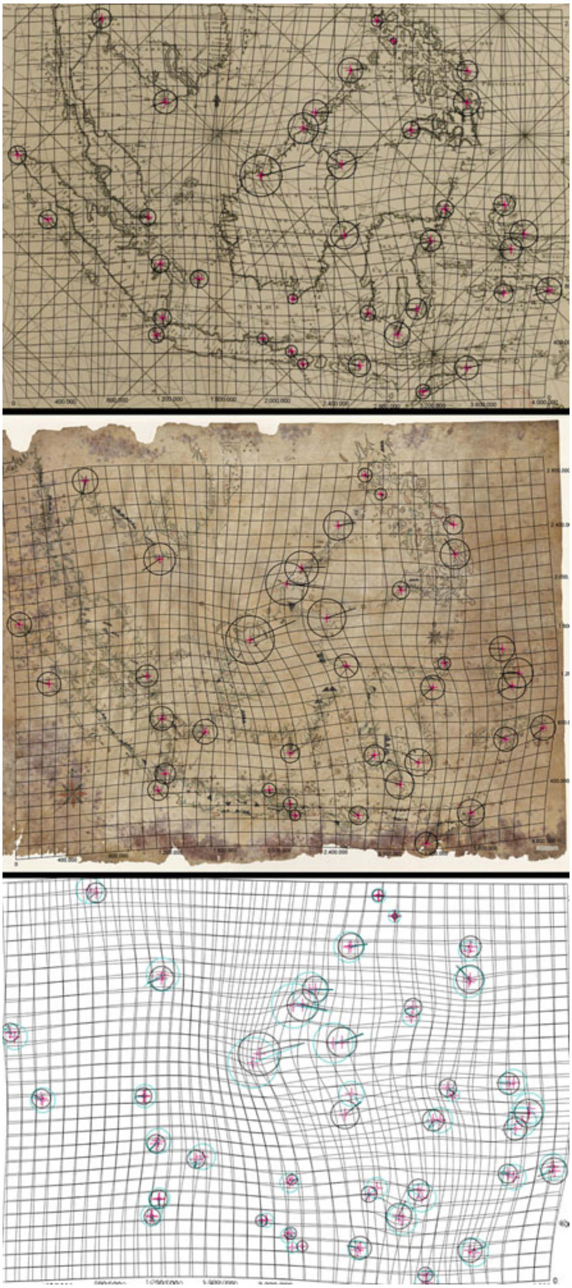

Fig. 7 Comparison accuracy analysis of the chart by D'Après de Mannevillette with the Utrecht copy of the Buginese chart (*Source* Mapanalyst, Helmert 4 parameters)

(a)

(b)

Fig. 8 VOC chart of the Java Sea, by Isaak de Graaf, 1737, Utrecht University Library, Kaart: Moll 625 (**a**), and highlighted the part of the Buginese chart that is probably based on such a VOC source (**b**)

positioned elsewhere and is much more prominent. Besides, in the Java Sea we see all kinds of soundings which are missing anywhere else on the Buginese maps and are not at all present on the French source map. Probably for the area of South-Borneo and the Java Sea a complementary source map was used. And with this conclusion the Dutch VOC maps appear on the scene. For this specific part the Buginese probably made use of a vellum VOC map of the Java Sea (illustration 8); after all, here we see lots of soundings and also the outlines of the coastlines of Borneo roughly correspond.[20] Apparently for this area the Buginese navigators put more trust in the Dutch VOC material than in the French hydrographic map image. And with reason …

4.3 Knowledge and Skills of Buginese Chart Makers

Based on what is said before we may conclude that in making their cartographic prototype the Buginese chart makers probably used the chart by D'Après de Mannevillette, complemented by geographic and hydrographic data from a VOC map of the Java Sea. But is there evidence that the indigenous chart makers actually had the knowledge and skills at all to interpret Western sources and remodel them to their own charts? And did they have access to this type of sources? Le Roux has a clear answer. For instance he quotes Thomas Forrest (ca. 1729-ca. 1802), captain of the English East Indian Company who says the following about the Makassar and Buginese people in his book *Voyage from Calcutta to the Mergui Archipelago* [...] (London 1792: 82): "They are fond of charts, I have given many to certain *Noquedas* (commanders of Prows) for which they were very grateful, and often wrote names of places in their own language, which I read to them on the charts […]."[21] Among inland kings there was a great desire to possess European map material and also before Forrest's time the Buginese dignitaries were interested in the results of European geography and cartography. Moreover, indigenous craftsmen were adept in drawing maps.[22]

[20]About VOC charts on vellum, Schilder & Kok (2010), Chap. 7, part B, Catalogue of VOC Charts in manuscript on vellum.

[21]Le Roux (1935: 698).

[22]Le Roux (1935: 698–701) mentions many examples and also a reproduction of an indigenous map on plate 18 of Thomas Forrest, *Voyage aux Moluques et à la Nouvelle Guinée* (Parijs 1780). The original of this map should be located in the British Museum in London.

It can also be assumed that Buginese chart makers in the 17th and 18th century sometimes served the VOC and came into contact with patented charts. Buginese seafarers often carried freight for this company.

5 Conclusion

Summarizing we may say that the Utrecht copy of the Buginese chart can be placed in an indigenous cartographic tradition. More of this type of hand-drawn charts on vellum are known, which show large similarities with respect to content and style. It is probable that a standard model with the outlines of the areas in the archipelago was used to make the charts. We may assume that this standard model is based on the French survey map of the Indian Archipelago by D'Après de Mannevillette from 1745, supplemented by geographical and hydrographic information from a Dutch VOC map of the Java Sea. At the time, the indigenous cartographers were in possession of such Western cartographic sources and were very well able to use these sources to make a compilation serving as a functional instrument for their own navigation in the East Indian waters. The Buginese charts are therefore 'hybrid' and a typical mix of Western and indigenous cartography.

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A Collage of Many Things: Rethinking the Making of the Selden Map

Tsung-jen Chen

Abstract Thanks to its atypical qualities and the mystery behind its creation, the so-called Selden Map of China received plenty of academic attention following its rediscovery in 2008. This early-seventeenth century map uses seemingly traditional Chinese map-making techniques to depict the Ming state, Joseon Korea, Japan, as well as maritime Southeast Asia. On the other hand, the coast lines of Southeast Asia exhibit a great likeness with modern maps and are unlike any other contemporary works. Scholars have explained the accuracy of the Selden Map differently. In this essay, I argue that both the argument of systematic geometrical techniques and indigenous route data each only insufficiently explain the creation and characteristics of the Selden Map. The Selden Map is a combined work and represents a hybrid combining contemporary Chinese and European data sets.

1 A Pretty, Accurate Map

The artifact known as the Selden Map[1] (see Fig. 1) has received plenty of scholarly attention during recent years. With a size of approximately 1.5 m in length and 1 m width, the map depicts Ming China, Japan, Joseon Korea, as well as parts of what is known today as Southeast Asia. Based on the map's content, it can be dated to the early seventeenth century.

This is also an extraordinarily beautiful artifact that exhibits traditional elements of Chinese cartography, with plenty of details such as mountains, rivers, trees, flowers, or cities added atop the basic topographic content. At the same time, however, this map has another characteristic: it is an accurate depiction of what is

[1]Collected in the Bodleian Library Collection, MS Selden Supra 105, Oxford University. http://iiif.bodleian.ox.ac.uk/iiif/viewer/58b9518f-d5ea-4cb3-aa15-f42640c50ef3#?c=0&m=0&s=0&cv=0&r=0&xywh=-5831%2C-579%2C18552%2C11561. Last accessed 25 Nov 2017.

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Fig. 1 The Selden map of China (with permission from The Bodleian Library, University of Oxford)

nowadays known as East Asia. Within the map, coastal lines are presented with a level of detail that approaches modern standards and far surpasses contemporary works from Ming China. Traditionally, the Chinese Empire figured as the descriptive center of maps. Outlying islands or an accurate depiction of topographical features, on the other hand, were not a primary concern of artists.

In stark contrast, the Selden map shows the Ming Empire as part of—but not center—of the region of East Asia. Moreover, it also pays attention to islands, geographical characteristics, as well as maritime trade relations. In his research, Timothy Brook has analyzed the Selden map via GIS coordinates, which allowed him to demonstrate that "the best fit between what the Selden cartographers drew and the actual shape of East Asia resulted when we broke the map into sections and allowed the landforms to move apart around from the South China Sea." Based on his findings, Brook exclaimed that "the map revealed a degree of accuracy that is astonishing for its time" (Brook 2013: Fig. 26). It is thus possible to affirm that the Selden map continues the ornate style of Chinese map making, yet at the same time combines it with the emphasis on accuracy found only in contemporary European maps.

2 Explaining Accuracy in a Chinese Map—Product of a New Technique?

Scholarly interest in the Selden map originated in Robert Batchelor's initial unearthing of the artifact from the archive. Chinese scholars in particular wrote a plethora of articles discussing the map's possible artist(s), date(s) of production, as well as other characteristics. Moreover, since the map contains detailed seafaring routes, many Chinese scholars unsurprisingly emphasized its importance in the context of Chinese map making, with some even claiming that the Selden map is actually a remnant of a 'Chinese' merchant organization and thus representing not only an early Chinese interest in trade, but also demonstrating close familiarity with the region of the South China Sea (Fung and Chen 2015). How exactly the map has been crafted and where, all of a sudden, the ability to create a map of such detail came from, on the other hand, were questions that have not been discussed by these scholars in greater extent.

Some scholars such as Robert Batchelor, Timothy Brook or Stephen Davies have also discussed the Selden map, in the process paying more attention to stylistic questions and the thorny issue of how to explain the map's high accuracy. Davies, for instance, explains that maps "can be 'composed' in the manner of a painting." Or, as the Selden map shows, "they can be 'constructed' by using more or less systematic geometrical techniques," which here would be "an early and simple type of polar coordinate system, [which] is the key feature of the Selden map's construction" (Davies 2013: 97).

Batchelor agrees with Davies assessment and affirms that the makers of the Selden map employed "previously unknown map-making techniques" (Batchelor 2013: 37). In his *Mr. Selden's Map of China: Decoding the Secrets of a Vanished Cartographer*, arguably the most famous work on the topic, Timothy Brook also weighs in, agreeing that the Selden cartographer must have seen "a slightly earlier European map of East Asia and copied that." Ultimately, however, Brook dismisses the European origin theory, claiming that the variability of scale suggests that the author "was working from another data set." In the end, he believes that the maker of the Selden map "drew the route lines first, based on the route data in his rutters, and filled in the coasts around them" (Brook 2013: 161–162).

For the aforementioned scholars, then, the most decisive trace is the appearance of seafaring routes on the map. Another crucial element can be found on the back of the map, where a hand-written line appears that Batchelor assumes to represent the route from Japan to the ports of Indochina, and which could be a remnant from the map's initial draft. Batchelor proposes that the map was based on data from Ming Chinese seafarers, which in itself would be the first time native map makers have incorporated nautical knowledge into their work. Finally, Brook also agrees that the recently discovered line on the backside was derived from actual trade routes.

In 2016, British scientists subjected the map to an in-depth analysis of its materials and the techniques applied. According to their findings, the sea routes indeed preceded the painting of the coast lines, as can be seen in the two examples of southern Vietnam and Cambodia, as well as Bali on Java; in both instances the coast is actually painted over some seemingly derelict trade routes (Kogou et al. 2016: 14–16).

These two examples are highly interesting findings. To my mind, these corrections do not stem from the cartographer's lack of attention, but rather from the existence of two data sets. The first of these two sets is represented by the information from Ming Chinese seafarers, which was postulated by the aforementioned scholars. The second set, on the other hand, would be some pre-existing cartographic data that ultimately allowed the maker of the Selden map to compare and revise the routes.

If we want to explain the making of the Selden map we cannot simply focus on seafaring routes. In other words, if Davies and others were right in their emphasis on systematic geometric techniques and route data, then the final product would actually resemble a schematic transit map, with islands and ports appearing as nodes on an infrastructural network. More detailed aspects such as coastal topography, on the other hand, would be impossible to render based on such data, thus begging the question where the Selden map's cartographers derived such information from.

In order to solve this riddle, I begin here to ponder the possibility that other cartographic works had been consulted, which may explain the accurate depiction of terrain and waterways.

3 Influence of Other Techniques? The Making of the Selden Map

It has been pointed out that much of the information on which the Selden map is based probably came from Ming China. However, the fact that localities not under Ming jurisdiction or outside of what can be broadly seen as the Chinese cultural zone are also annotated in Chinese characters here should not mislead us to assume that these, too, are of necessity based on Chinese sources. In order to identify other data sets and influences that shaped the making of the Selden map, we need to consult works—both visual and literary—from local Chinese traditions, and contemporary Joseon Korea, Japan, as well as Europe.

3.1 Native Mapping

Both Western and Chinese scholars have asserted that partially at least the artists involved with the Selden map imitated Chinese map-making techniques, yet so far no actual work has been pinpointed that could be seen as blueprint. Batchelor argues that maps from the popular Ming encyclopedia *Gems from the sea of wisdom* (Xuehai Qunyu) could have functioned as models. The work, which is now in the East Asian collection at Leiden, may have been brought to Holland in the 1620s by the missionary Justus Heurnius, who possibly had obtained the book during his stay in Batavia (Batchelor 2013: fn. 14). The work itself belongs to what scholars have grouped as compendiums. It was produced in Fujian's well-known printing hub Jianyang County, from where it was also sold in the late sixteenth to early seventeenth century. Within the encyclopedia, practical knowledge for families is separated topically into different volumes for everyday perusal.

Nowadays over thirty of these compendiums are known, with some carrying a different name but sharing similar content. Most of these works have a 'Geographical category' (diyu menlei), under which a map of the empire's reach is usually included under similar names such as 'General map of the 28 established divisions of the great Ming' (Ershiba xiu fenye huang Ming gesheng di yu zong tu), 'Map of the universe's 28 divisions' (Tianxia yitong ershiba xiu fenye diyu zhi tu), or 'General map of the mountains, rivers and regions' (Shanhe diyu zongtu). One of the biggest characteristics that these maps share is the idiosyncratic way in which provincial borders are drawn as rivers all over the imperial landscape. Additionally, the eastern side and the southern coast are related to each other in a vertical order, connecting at Fujian. Whereas Hainan is presented as part of the Chinese landmass in these maps rather than as an island, Indochina is not shown with the exception of some state names such as Annam or Champa, which are disseminated loosely over the open waters.

While Batchelor views the Gems from the sea of wisdom as original source of the Selden map's data, Timothy Brook argues that another work from 1599, the Practical orthodoxy (Wanyong zhengzong), carries a similar map and may thus be a potential blue print for the Selden Map. However, Timothy Brook acknowledges that although several names of locales and the artistic style share similarities, the China portion of the Selden Map and this work do not constitute a perfect match. Agreeing that the biggest difference between these maps are their respective frameworks, he ventures that the artists may have inserted "one map into another" (Brook 2013: 157–158).

The two maps mentioned by Batchelor and Brook do indeed share great similarity with the Selden Map's portion of the Ming Empire. However, the creator of the latter probably did not take these as model, but rather chose similar maps as reference. In fact, such works were quite common in the Ming dynasty as administrative maps, yet unlike other works of political topology such as the *Map of the Vast Empire* (*Guang yu tu*), they placed the provinces within a traditional cosmological framework, the so-called '28 established divisions' (ershiba xiu fenye). According to this cosmological topology, each province's respective location corresponded with a distinct set of stars.

Arguably more important is, however, that these Fujianese compendiums reflect local culture, including history, geography, as well as specific spatial conceptions such as the aforementioned divisions (fenye). Since the creators of the Selden Map have consulted these works, we can assume a certain familiarity with Fujianese spatial understandings. Beyond that, we may also ascertain that for contemporaries at least, these maps represented relatively new—not outdated!—geographical representations.

There is one rather conspicuous difference between the compendium maps and the Selden Map, however, namely the way they depict the coastal areas of the empire. Whereas the latter projects a change in direction of the coastline at around the height of Ningpo in Zhejiang province, the compendium maps idiosyncratically show a ninety degrees turn at Fujian. In other words, although the Selden Map in many regards was created under the influence of such compendium maps, it clearly did not follow these models when it came to the task of portraying the coastal regions. Moreover, whereas the latter posit open waters below the southern part of the Ming Empire, the Selden Map portrays quite accurately Indochina. In regard to the depiction of Joseon Korea, the Selden Map also clearly consulted other sources, as will be discussed in a different forthcoming article of mine.[2]

3.2 *Mapping of Japan and the Ryukyu Islands*

Within the map to which Timothy Brook compared the Selden Map, one region that has been neglected so far is the island group that encompasses Japan and Ryukyu. This region is quite important, however, as its depiction could help us understand the creation of the artifact. In stark contrast to our geographic understanding of Japan, the Selden Map shows one large island prominent in the middle of the Japanese maritime region, with a smaller one in the north and several islands in the

[2]In 2014, I have already presented an unpublished paper called 'The Selden Map's Portrayal of Joseon Korea and its Underlying Sources' at the conference *Taiwan and East Asia in the Age of the Great Navigators*, which was jointly organized by the Research Center for Humanities and Social Sciences, National Tsing Hua University, and the Institute of Taiwan History, Academia Sinica.

south; the southern island group, which encompasses Ryukyu and Taiwan, reaches down to the Fujianese sea.

Based on the Japanese case, it becomes clear that the accuracy of the map may have been exaggerated in certain regards. Some scholars claim that this inaccuracy is rooted in the artist's unfamiliarity with Japan. (Brook 2013: 165)[3] At the same time, however, we could also question the motifs behind depicting Japan in this manner—is it sheer imagination, or grounded in biased sources and a specific cultural context?

One way of fathoming the reasons for the Selden map's untypical, or inaccurate, depiction of Japan would be to compare it to popular contemporary maps of Japan. In an already published article I have analyzed maps of sixteenth century Ming China, Joseon Korea, and Japan, pointing out that in all these regions the Japanese Gyōki style dominated, albeit with different characteristics.[4] Since the Selden map shows no traces of the Gyōki style, we can rule out Chinese, Korean, or Japanese sources in this regard.

When it comes to contemporary European maps of East Asia or Japan, on the other hand, a broader analysis can be undertaken. Here we can discern four distinct traditions:

1. The Homem type: Within this type of map, a peninsula stretches from the eastern part of the Asiatic continent to the southern coast. The southern part of this peninsulas is accompanied by several smaller islands of different size that reach to the southwestern regions.
2. The Mercator type: Shown at the eastern part of the Asiatic continent is a large island, which in the north and south is extended by groups of islets; the southern islands reach up to the Fujianese coast.
3. The Ortelius type: Influenced by Japanese Gyōki-style maps, this tradition depicts a larger island called 'Iapan' at the position where today one would expect Honshū. Below it is an island called 'Tonsa', where today Shikoku can be found today. In the southwestern part several islands exist in the space occupied by Kyushu.
4. The Dourado type: This Japanese-style map resembles the Ortelius type and also imitates the Gyōki style. However, here the eastern part of Honshu extends downwards, a representation that was popular in 16th century Ming maps of Japan.

[3]According to Timothy Brook, the lack of accuracy stems from the fact that the Selden map's creators have never traveled to Japan. This argument would however beg the question of whether they actually have traveled to all other regions themselves which commentators such as Brook have characterized as accurate.

[4]This type of map was popular in sixteenth and seventeenth century Japan and influenced cartographic depictions of Japan in Ming China and Joseon Korea. See Chen Tsung-jen, 'The Depiction of Japan in the Selden Map and its Historical Sources,' in Shiuh-Feng Liu ed., *Transmission of Information and Mutual Understanding across the Asian Waters* (Taipei: Research Center for Humanities and Social Science of Academia Sinica, 2017).

These four types can be distinguished into two large categories: the first one consists of the Dourado and Ortelius types, which imitate the Japanese and Chinese Gyōki style. The other one, represented by the Homem and Mercator type, is based on data derived from Portuguese seafarers and missionaries. In the Homem type, northern Japan is connected to the Asiatic continent, which insinuates that these European sailors were—compared to the Japanese south—relatively unfamiliar with this area. The earliest of these maps is Lobo Homem's 1554 work, which in total only includes three localities related to Japan. The second type represents Japan as one large main island with groups of peripheral islands.

Since the Selden Map's depiction of Japan differs pronouncedly from contemporary Ming and Joseon paradigms, would it be possible that its creators have consulted one of these types? Based on the summary above, we can rule out types 1, 3, and 4, all of which also bear no resemblance to the Selden Map's portrayal of Japan. The second type, i.e. the Mercator map, on the other hand exhibits a strong likeness, depicting one central large island surrounded by islands in the north and south. In the south in particular a group of smaller islands reaches well into the southwestern region similar to how the Selden Map portrays this maritime region.

This type of map appeared first in the 1569 *World Map of Mercator*. In the north of Honshu, a group of islands called 'Insule de miaco'—what is now known as Kyoto—is shown. On the southern side of this group an annotation reads Torza, exactly where one finds the southern part of Shikoku nowadays. In other words, we can postulate that this map already accounts for both Honshu and Shikoku.

According to Japanese scholar Nakamura Hiroshi, this cartographic tradition originated in the 'Planisphère portugais', a map collected in the Roman *Biblioteca Vallicelliana*: (Nakamura 1966). Although the author and the date of this work are lost, Nakamura estimates its creation to around 1540s.[5] Within this map, the maritime region of Japan and Ryukyu is very similar to the Mercator map, but Japan itself is not yet drawn noticeably bigger in comparison to the other islands.

On the Mercator map Japan is annotated in Latin as 'Japan dicta Zipangri a M. Paulo Veneto, olim Chrise', which can be translated as 'Japan, called Zipagri by M. Polo the Venetian, Formerly Chrise.' Additionally, there are other locales noted such as Amanguco (Yamaguchi), Cangoxima (Kagoshima), Miaco academia (Kyoto), Frascon, Homi, Negru, Chela, and Bandy.

Yamaguchi and Kagoshima are both located on Kyushu, while Kyoto is shown to be on Honshu. In other words, the author of this map was not yet aware that these are two distinct islands, which is why these annotations all point to a singular 'Japan'. Japan here primarily refers to Kyushu, i.e. the place where Portuguese sailors set foot first. On the other hand, places such as Kyoto and Homi, both of

[5]Nakamura's view is based on the line 'Nveva Gvinea' for New Guinea, a nomenclature that was first established in 1545 by Ruy Lopez de Villalobos during his travel through the Pacific Ocean. Additionally, since Japan is shown in a much simpler fashion compared to Lopo Homem's later work, yet more basic information about Japan emerged as soon as 1547 and 1548 from Jorge Alvarez's travel description, the map can be pinpointed to 1545–1548. Concerning Alvarez's time in Japan see Nakamura, 1966: Vol. I, pp. 8–10.

which are annotated as possessing an academy (academia), are based on the 1540s Jesuit Francisco Javier's record of his visit to Japan (Kishino 1989: 233–234). This map thus reflects the knowledge of contemporary Portuguese sailors and Jesuits in regard to Japan.

In the southern region below Japan is shown a longer island group consisting of two parallel lines, with two regions in particular having bigger individual islands. The northern one is annotated as Lequio Major, i.e. Da Liuqiu. In the south, there are two adjacent islands accompanied by Lequio minor, Xiao Liuqiu. These two islands, which refer to today's Okinawa Islands and Taiwan, reflect the common usage of sixteenth century Ming officials and commoners. We can thus assume that this map has been influenced by Ming dynasty views of maritime Japan and Ryukyu.

It is worth noting that the Selden Map not only resembles the Mercator map in regard to Japan, but also when it comes to the coastal areas of the Ming Empire. On the Mercator map, the Chinese coast makes a turn at around the height of Ningpo (or the Zhoushan islets). Some European maps of the sixteenth century have added 'C. de Liampo' here as description, which refers to Ningpo Jiajiao. The same topological depiction can be found on the Selden Map, and both the location of Jiajiao and Japan are related, with the former being on a lower latitude than the southernmost point of Japan. At the same time, however, this type of depiction also appears on the corresponding Homem and Dourado maps, as well as on the map found in Jan Huyghen van Linschoten's work.

Simply put, these cartographic trends reflect the specific knowledge mid-sixteenth century Portuguese possessed of the region spanning from Ming China to Japan. At the point called Liampo (Dual islands—Shuangyu—in Chinese), the Portuguese traded with Chinese and Japanese merchants. In 1540, the Spaniard Alvarado García de Escalante during his stay on the Maluku Islands obtained some information regarding Japan. According to his sources, the Isla de Japón was located at a latitude of 32°, and the distance from Japan to Liompo (i.e. Ningpo) measured approximately 155 lequas. Moreover, both were said to be connected almost directly by a horizontal line (Alvarado 1999: 127–128).

The Mercator type can be further distinguished into two sub-categories in regard to Japan's positioning, with one being marked by a straight direction, while the other exhibits a slanted form. Both in Mercator's 1569 *World Map* and the world map collected in Ortelius' 1570 *Theatrum Orbis Terrarum*, the Japanese island is reaching from the northeast to the southwest in a slanted form. In the *Indiae Orientalis Insularumque* (see Fig. 2), which is also collected in *Theatrum Orbis Terrarum*, Japan is drawn straight from north to south. This is the notable exception, however, as the majority of Mercator maps portrayed it in the slanted form.

In light of this we can surmise that the Selden Map is not only based on the Mercator type, but also that is was probably the *Indiae Orientalis Insularumque* from Ortelius' collated work (or a similar map) on which the former's straight depiction of Japan was based.

We can thus assume that the overlap between the Mercator map and the Selden Map regarding the positioning and shape of the Japanese and Ryukyuan islands as

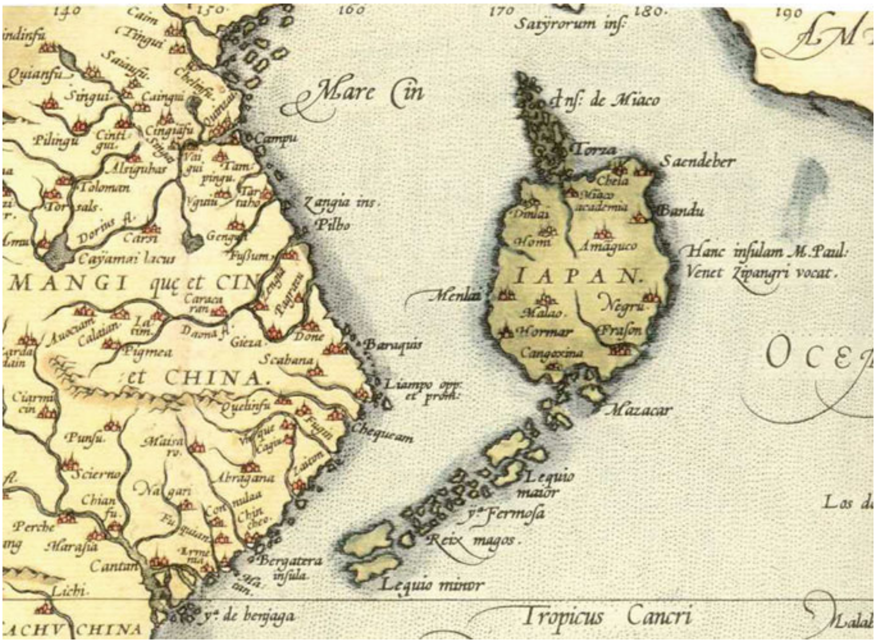

Fig. 2 The Japnese portion of *Indiae Orientalis Insularumque* (with permission from National Museum of Taiwan History, Taiwan)

well as coastal Ming China is quite likely due to the former figuring as model for the latter. This specific manner of portraying Japan reflects the understanding of sixteenth century European cartographers. While lacking personal experiences, map makers such as Mercator and Ortelius derived their knowledge of Japan and East Asia from earlier Portuguese sailors and missionaries. Following their works in the famous *Theatrum Orbis Terrarum*, these maps gained in popularity with each reprint of Ortelius magnus opus.

3.3 Mapping Southeast Asia

The Selden Map's depiction of Southeast Asia is arguably its most modern feature. There are scholars who believe this accuracy to be grounded in new cartographic techniques, arguing that personal experiences or calculations were its basis. This assumption is problematic, however. Instead, as the subsequent analysis will show, it was still the influence of sixteenth century European maps which allowed the Selden Map's creators to trace the outlines of Southeast Asia with such accuracy.

3.3.1 Indochina, the Malay Peninsula, and Sumatra

In regard to Indochina, the Malay Peninsula, and Sumatra, the Selden Map exhibits a relatively high level of accuracy and detail when compared to other contemporary works. At the same time, however, we must assert that both Mercator and Ortelius in the sixteenth century had produced maps with a striking similarity when it comes to Southeast Asia's coastal regions. Rather than the sheer accuracy of the map, a point of misrepresentation moves these European predecessors and the Selden Map together. On the Mercator map is shown a large body of water called Chiang Mai Lake that serves as endpoint for Thailand and Myanmar's rivers. Jan Huyghen van Linschoten (1563–1611) in his work *Itinerario* also mentions this lake. However, this lake was a product of their imagination and not in line with reality (Suárez 1999: 152–156). Interestingly enough, on the Selden Map, too, the central waterways of Indochina flow towards a lake that is annotated as 'Source of the Yellow River' (Huanghe shuiyuan). These drawings of waterways converging in a big body of water are not the result of actual observation, but rather derived from the writings of sixteenth century Portuguese travelers. More so, as the examples above demonstrate, these depictions also appeared commonly in contemporary European maps.

3.3.2 Java, Borneo, Lesser Sunda Islands, and Sulawesi

The majority of drawings found in the Selden map are quite similar to their modern counterparts. The part showing the region eastwards and northwards of Java must be seen as the least accurate depiction, with the green blots there reminding us that the artists had reworked the map thrice at least. In the first draft, Java extended all the way to the Lesser Sunda Islands, where it made a turn and extended further up north to the Maluku Islands. The subsequent revision in green then presented a longer Java stretching from East to West. The island that was initially stretching northwards, on the other hand, was erased.

The second revised part concerns the relative location of Borneo and Sulawesi. In the first draft, the two were located, with Borneo in the West furthermore being separated into two islands. In the revision, the southern island of Borneo is erased, thereby causing Borneo to be located in the north of Sulawesi. Originally, this region also featured a port called 'Machen', or Banjarmassim. This port was in the south of Borneo, but following the reworking of the map, it is no longer accounted for.

The third revised part is situated between Borneo and Java. Initially, the authors pictured a large island in this maritime region, with a circle featured prominently on the island to account for another port. Following the revision, this large island has disappeared. In sixteenth century maps from Mercator and Ortelius, we can also see a large island called Macace in the region where today Borneo, Sulawesi, and Java are. Portuguese sailors originally assumed that Sulawesi was a group of islands with two bigger islands, Celebes and Macace. In reality, however, Celebes is what we know as Sulawesi today, whereas Macace probably refers to the port of Makassar on the southwestern side of Sulawesi Island. In other words, the decision to erase this nonexistent island by the authors of the Selden Map was correct. At the same time it is worth noting that they erroneously drew the two ports of Makassar and Ambon on the same island; actually the latter is located on a small island to the east of Sulawesi. Quite clearly, when it came to the region eastwards of Java and to the north, the Selden Map's authors were somewhat limited in their understanding.

Put bluntly, the Selden Map's depiction of Southeast Asian islands such as Java, Borneo, the Lesser Sunda Islands, or Sulawesi is quite confused. This may be due to the confluence of two different geographical sets of knowledge: the original draft envisioned Java extending eastwards, then up north. Additionally, Borneo was in the west of Sulawesi Island, and in the south of Borneo a large island was shown. The creators of the map subsequently changed their work in the three regards outlined above, with Java lacking the northern bent, Sulawesi and Borneo now being arranged in north-south direction, and the large island gone. Both depictions are faulty, as they show Java and the Lesser Sunda Islands connected when in reality they are separated. The erasure of Macace Island, on the other hand, is correct, yet the change of direction in regard to Sulawesi and Borneo introduced a new mistake. Quite obviously, the makers of the Selden Map were unsure what information concerning Southeast Asia's maritime region they could trust, leading to corrections and new errors.

We can assume, however, that the initial draft of the Selden Map was influenced by a Mercator-type map. For example, the *Indiae Orientalis Insularumque* found in Ortelius' work annotated 'IAVA MAIOR' for Java and depicted a group of islands that extend to the east, only to then turn and span westwards up to Sulawesi (Celebes). This is of course not in accord with the actual geographic situation, as the Lesser Sunda Islands extend eastwards to Guinea, but not northwards to Sulawesi (Celebes). It is possible that the depiction in the *Indiae Orientalis Insularumque* was influenced by seafaring routes such as those that go from Fujian to the northeast up to Japan; in fact, in the geographical knowledge of seventeenth century Ming sailors we can find similar specifics. Additionally, the larger island shown in the north of Java resembles the island denoted as Macace in the Mercator maps.

Although the Selden Map's cartographic visualization of this maritime region is suffused with details that are either imaginary or plain wrong, it is important to note that the same cannot be said for the shown sea ports; almost all are relatively correct in their geographical position. In this regard, the arguments of Timothy Brook and others regarding the making of the map ring true: based on nautical data, the creators of the Selden map could pinpoint the locations of ports that were relatively well known to contemporaries.

3.3.3 The Drawing of the Philippine Islands

When it comes to the depiction of the Philippines, the Selden Map exhibits yet another style. In the sixteenth century, European world maps lacked most of the archipelago, with only a few southern islets appearing. The aforementioned *Indiae Orientalis Insularumque* found in Ortelius work adheres to this pattern, as does

Plancius' *Orbis Terrarum* from 1590. Plancius' 1592 work *Insulae Moluccae*, however, already features the Philippine islands in what resembles their current form, as does the map found in Linschoten's book. We can thus deduce that when it comes to the Philippines, the Mercator type did not influence the Selden Map's creation. Current understanding posits the origins of European maps of the Philippines with Bartholomeus Lasso, whose work depicts Luzon and the Sulu Sea, but gets the Palawan group—called Calamianes there—wrong as it is shown as one large island stretching from east to west. Interestingly enough, the Selden Map's depiction of the Philippines resembles Lasso's work, yet by positing Palawan as a group of islands it already surpasses the former's accuracy.

4 Conclusion

Both this author and other scholars have pointed out that the Selden map is partially based off of Fujianese archives of maritime knowledge. This knowledge has determined its accuracy particularly in regard to its depiction of the Ming portion and the seafaring charts. However, as this author contends, other parts of this map are based on European works. As the example of Japan shows quite clearly indeed, Ortelius' *Indiae Orientalis Insularumque* from 1570 in particular must have been crucial in this regard and served as the main model. Additionally, the coastal line of the Chinese coast, as well as Indochina's river network and its convergence in the imaginary Chiang Mai Lake further demonstrate the close resemblance between the Selden Map and its European blueprint. At the same time, the many revisions of the Southeast Asian maritime region betray the insecurity and changing understanding of the Selden Map's makers. Initially maintaining faith in the Ortelius map from 1570, they at some point changed their mind and revised the depiction decisively, among others by adding the Philippines. However, they evidently did not partake in the new geographic knowledge obtained by Dutch sailors that become available at that time.

To my mind, the creators of the Selden Map did not draw this work based on actual first-hand experience, as some scholars have implied. Nor did they simply rely on nautical information from Ming sailors to accomplish this task. In reality, they used several maps, navigational charts, and other types of information to produce a collage. This way of collating information into a single map was of course not a groundbreaking method, but rather a tried and true way of doing things both in East Asian and European cartographic history. Old maps were thus employed as framework onto which new information was projected. In other words, the Selden Map is a collage of contemporary Ming and European maps as well as nautical data, not an independently-based original work of its makers.

The Selden map was created in the early seventeenth century, the early modern period in which exchanges and hybridizations of knowledge began to take place on a hitherto unprecedented scale. In 1601, Matteo Ricci presented his famous 'Map of the Myriad Countries of the World' (*Kunyu Wanguo Quantu*) to the Ming emperor, which was annotated in Chinese yet simultaneously incorporated Ming China into the European cartographic imagination. More so, the 'Map of the Myriad Countries of the World' brought the concept of five continents to China. In the past, scholars tended to focus more on the contributions of the Jesuits in this context, with Matteo Ricci being a prime example. The Selden map, however, urges us to pay attention to the role of Southern Chinese and their active participation in these networks of knowledge. The Selden map thus on the foundation of European maps of Asia integrated geographical concepts of Ming sailors and merchants, both localities and navigational routes. Additionally, they also added their understanding of East Asia into the mix, allowing the map to reflect a world view that was unique to early seventeenth century seafaring Chinese.

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Jesuit Contribution to the Mapping of the Philippine Islands: A Case of the 1734 Pedro Murillo Velarde's Chart

Mirela Altić

Abstract Drawn in the Portolan style by Spanish Jesuit Pedro Murillo Velarde (1696–1753), and published in Manila in 1734, the chart of the Philippine archipelago is considered as the first scientifically based map of the Philippines. In this paper we will discuss how this chart was compiled, which sources and methods were used, and how the Pedro Murillo Velarde's chart of 1734 influenced the dissemination of geographic knowledge on the Philippines throughout the entire eighteenth century, especially the appearance of the Philippines on the VOC's charts as well as British nautical charts of the Philippines produced by Alexander Dalrymple.

1 The Concept of the Spanish Mapping of the Archipelago—The Philippines as a Trans-Pacific Entity

From 1565 to 1821, the Philippines was governed as a territory of the Mexico-based Viceroyalty of New Spain. The Spaniards, who progressively occupied the Philippine Islands during the first half of the seventeenth century, eventually contributed significantly to bringing political unity to the fragmented states of the archipelago. For centuries, the archipelago was Spain's outpost in the Orient with Manila as the capital of the entire Spanish East Indies (the Philippines, the Mariana Islands, the Caroline Islands). During this time, Manila became the western hub of the trans-Pacific trade, connecting Asia with Acapulco in the Americas using the Manila galleons.[1]

From its very beginning, the mapping of the Philippines took place in specific colonial settings: situated between the trade areas of the Dutch East India Company, the British East India Company, the French East India Company and the Portuguese,

[1]For general insight into the colonial history of the Philippines cf. Cushner (1971).

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the Philippines were a defence line of the Spanish Empire. To what extent the Philippines was politically and economically interesting to the trade and colonial forces that governed/traded in the neighbouring areas of Southeast Asia, is well represented through their mapping activities: until the middle of the eighteenth century, Dutch, Portuguese, French and English mapmakers published a much larger number of maps with the Philippines than the Spaniards who ruled the islands.[2]

The specific geopolitical position of the Philippines as the outermost part of the Spanish Empire had a significant impact on the way in which Spanish cartography sought to present the archipelago. To emphasize the strong link with Mexico, Spanish maps strove to present the Philippines as the westernmost extension of the Americas. This cartographic isolation of the Philippines from the rest of Asia and forming of image of the Philippines as a trans-Pacific entity was affirmed by Juan López de Velasco's *Geografía y descripción universal de las Indias* and by his map of the Spanish realm (Padrón 2011: 41). Velasco's work became widely known after being published by Antonio de Herrera under the title *Descripcion de las Yndias del Ocidentales* (Madrid, 1601) (Fig. 1).[3] That conception that prevailed until the late eighteenth century caused the predominance of Spanish maps that depicted the Philippines within the Spanish East Indies, or even more, along with the rest of Spanish possessions in the Americas.[4] The effort to present the Philippines as western islands strongly affected the scale, shape and orientation of the Spanish maps of the archipelago. Even when the first Spanish regional map of the Philippines appeared (Manuel Orozco's map of the Philippines, 1659), it was oriented to the south, showing the Philippines together with a part of Borneo and Celebes. This endeavour of inclusion of lands and waters south and east of the Philippines (which overlaps with Spanish trade routes) and the exclusion of any territory north or west of the Philippines (which would overlap with Dutch, French, Portuguese or English trade areas) was a long-lasting tendency of the Spanish cartography of the archipelago that would continue through the entire seventeenth and early eighteenth centuries. It was only the

[2]Spanish cartographers produced a surprisingly small number of maps that included the Philippines. Carlos Quirino, who published a chronological list of the maps of the Philippines for the period between 1600 and 1730, identified only two Spanish maps that showed the whole or most of the Philippines (Manuel Orozco's map of 1659 and Enrique Hérman's map of 1730). In the same period, dozens of maps came out of Dutch, French, and English cartographic workshops showing the Philippines within their maps of Southeast Asia.

[3]Descripcion de las Yndias del Ocidentales. Madrid: En la Emplenta Real, 1601. Engraving; 28 × 37 cm. Based on Velasco's manuscript map *Demarcacion y diuision de las Yndias*, [Madrid, 1575].

[4]The Spanish endeavours to present the Philippines as the most western part of their realm were especially boosted by the publication of the so-called Spanish-Portuguese demarcation along the antimeridian, established in the early sixteenth century, and still a matter of dispute. The Portuguese ran it through the Indonesian island of Giolo (present-day Halmahera), while Spanish cartographers placed it almost forty degrees west, in Bengal. Based on observations of lunar eclipses, Velasco placed the antemeridian at the longitude of Malacca, claiming for Spain a significant portion of South and East Asia, including the Spice Islands, China and Japan (Padrón 2011: 44).

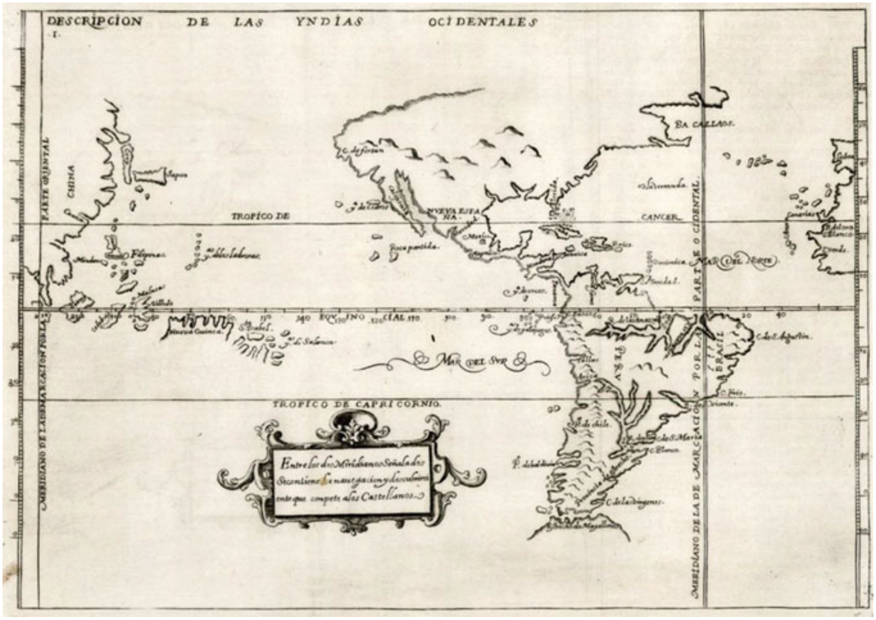

Fig. 1 Antonio de Herrera's map *Descripcion de las Yndias del Ocidentales* (Madrid, 1601) that affirmed Velasco's concept of Philippines as the most western part of America which prevailed in Spanish cartography until the late eighteenth century (Courtesy of Barry Rudeman Rare Map Collection)

appearance of the Murillo Velarde's chart (1734) that rejected the Hispanic concept of the Philippines as part of the Americas that announced a new era in the geographical presentation of the Philippines as a world unto themselves, becoming a powerful assertion of the Filipino identity.[5]

2 Jesuit Father Pedro Murillo Velarde

The Jesuits arrived in the Philippines in 1581, and their first permanent Jesuit mission was established in 1590. Soon after their arrival, the Jesuits began the exploration of their new mission territory.[6] In 1601, the *Colegio de San Ignacio* was

[5]However, it should be noted that the appearance of Velarde's map did not definitely end the Spanish tradition of presentation of the Philippines as part of the Americas. This idea would be revived with the map of Vicente de Memije, the *Aspecto geográfico del mundo Hispánico* (Manila, 1761).

[6]The Jesuits had established numerous reductions, of which there are no physical remnants because the indigenous people lived in dwellings of wood, bamboo and thatch more suitable for an

established in Manila and in 1605, the Philippine Province of the Society of Jesus was founded. The college, which in 1623 was granted a university status by the royal decree, soon became an important centre of education and scholarship in the whole of SE Asia.

One of the most prominent scholars of the *Universidad de San Ignacio* was Pedro Murillo Velarde (1696–1753), a Spanish Jesuit born in Villa de Laujàr (Granada) on August 6, 1696 (Pazuengos 1756: 19). He had a strong colonial background: his father Jacinto was a sergeant major who took part in the conquest of Central and South America while his mother was a descendant of Pedro de Valdivia, the conqueror of Chile. Murillo Velarde received his basic education in Jesuit schools in Spain (Murcia and Toledo), and from there he passed on to the Universities of Granada and Salamanca, from which he graduated in canon law. Even in his young age, Murillo Velarde showed great interests in history and maps. During his stay in Toledo, he often used a collection owned by the widowed Queen of Spain. After he had joined the Society of Jesus in 1718, he was soon sent to the Philippines, where he arrived in 1723 (Pazuengos 1756: 52, 56*).* After two years of missionary service among the Tagalogs, he was appointed professor of theology and canon law at the University of San Ignacio in 1725. Although he travelled extensively across the archipelago, the truth is that his life was closely linked to the aforementioned educational centre (Villoria Prieto 2015: 133). He stayed in Manila until 1749 when he became procurator of the Philippine province in Rome and Madrid. Murillo Velarde died in Spain on November 30, 1753, just before his return journey that would have led him back to the Philippines.

Murillo Velarde was a man of broad interests and wrote publications in such varied fields as law, history, geography, and cosmography.[7] He was an especially esteemed scholar in the fields of navigation and cartography. When Admiral José González Cabrera Bueno, one of the foremost navigators on Philippine trade routes, published his *Navegación especulativa y práctica* (Manila, 1734), it was Murillo who wrote the introduction chapter with a summary of the history of maritime explorations and placed the official seal of government approval and censorship on it (Quirino 2010: 59). The fact that Murillo Velarde was involved in the production and publication of this book, which contains detailed instruction on navigation and construction and use of nautical charts, confirms that he was considered supreme authority on this field. According to the testimony of father Miguel Selga, who served as a director of the Manila Observatory in 1926–1949, Murillo Velarde produced a large variety of maps that adorned the corridors of the College of San Ignatius but did not survive due to the destruction of the college building at the end of World War II.[8] Only two of his maps have been preserved until the present day,

archipelago in the Pacific 'Ring of Fire'. However, the reductions did leave massive churches, three of which were damaged in 2013, in the earthquake of 15 October, and by Typhoon Haiyan on 8 November.

[7]His most important books are *Historia de la Provincia de Filipinas de la Compañia de Jesús*, *Manila* (1749) and *Geographia historica* in 10 volumes (Madrid, 1752).

[8]For more on that issue, cf. Selga (1934).

the map of the Philippines (the editions of 1734 and 1744), and his world map that he included in his *Geographia historica* (Manila, 1752).[9]

Velarde's interest in maps was further encouraged by the fact that Governor-General Fernando Valdés y Tamón, during his term as Governor from 1729 to 1739, enabled cartographic activities to flourish.[10] Only in 1730–31, no less than three new cartographic publications appeared: a map of Manila by Antonio Fernández de Roxas,[11] Juan Antonio Cantova's map of the Caroline Islands,[12] and a new chart of the Manila galleon trade routes by Enrique Hérman[13] (all three were dedicated to Fernando Valdés). When in 1733, King Philip V ordered the Philippine Governor-General to enable the preparation of a new and more accurate map of the archipelago, Valdés had no doubt—he entrusted the task to Pedro Murillo Velarde, a distinguished Jesuit professor who was already acknowledged as the authority on maps and the best chronicles that had appeared in the archipelago. Although the engagement of the Jesuits in maritime mapmaking was not a precedent, the case of Pedro Murillo Velarde is certainly one of the most striking examples.[14]

3 The Murillo Velarde's Chart (1734) and Its Content

Aware of the importance of the Philippines for the economic and political power of their Crown, the Spanish authorities did not order the production of a standard navigational chart, but a presentation of the Philippines that would include a comprehensive catalogue of information necessary for the governance of the archipelago and its galleon trade, but which would also send a strong political message about the Spanish rootedness in the Philippine society. As Murillo Velarde had developed extensive mapping activities throughout the archipelago long before the King's order was received, he managed to deliver a finalized map of the

[9]Mapamundi arreglado a las mejores relaciones por el Padre Murillo de la Comp. de IHS.

[10]During the late seventeenth and early eighteenth centuries, the Spanish cartography of the Philippines fell into stagnation. In that time, only a few town maps and fortification plans appeared: military engineer Juan de Sicarra drew a plan of the fortifications of Manila (1714) and Zamboaga (1719), while chief pilot Juan Luis de Acosta compiled a map of the Cagayan River in northern Luzon (Quirino 2010: 55).

[11]Topographia de la ciudad de Manila, capital de las yslas Philipinas. Fundada en la de Luzon, Nuevo Reyno de Castilla: decicada al rey nuestro señor d. Felipe V … Delineada de orden desu mag.d por d. Antonio Fernandez de Roxas y esculpida por fr Hipolito Ximenez dl Orden dla hospit.d dl glor.o S. Juan d Dios. Madrid, ca 1730.

[12]Mapa de las islas de los Dolores ó Garbanzos (Carolinas), que dedica al muy ilustre Señor brigadier D. Fernando Valdés Tamón …

[13]Nuevo de Rotero para los galeones de la carrera que ha presentado Enrique Herman, piloto mayor de ella, governando ….

[14]E.g., the Jesuits took a maritime expedition along the Patagonian coast in 1745/1746, which resulted in one of the best maritime charts of Patagonia produced by Spanish Jesuit and former naval officer José Quiroga. Cf. Altić (2017).

Fig. 2 Chart by Pedro Murillo Velarde engraved in Manila by Nicolás de la Cruz Bagay in 1734 (Courtesy of Geography and Map Division, Library of Congress)

Philippines already in 1734 (Pardo de Tavera 1910: 141). Drawn in the portolan style, the Velarde's chart was engraved and printed in Manila in 1734 by Nicolás de la Cruz Bagay, a native Tagalog (*Lo esculpió Nicolás de la Cruz Bagay, Indio Tagalo en Man. Año 1734*) (Fig. 2). He was the official printer of the Jesuit press in the Philippines, owned by the College of San Ignatius, and an outstanding engraver. According to Quirino (2010: 62), Nicolás de la Cruz printed at least thirty-seven books dating from 1743 to 1768, when he, due to the suppression of the Order, probably got retired from the printing, yet not from the engraving, which he continued to produce until 1788. Cruz engraved another two famous maps of the Philippines, those of Vicente de Memije of 1761.

The chart of the Philippine archipelago is considered the first scientifically based map of the Philippines.[15] Compiled in the scale of ca. 1:1,400,000 (*Tronco de 20 leguas españolas de 17 1/2 por un grado*), it was until then the most detailed map of the Philippines, which sheet measured 112 × 120 cm. Compared to previous Spanish maps, Velarde's cartographic work brings a major novelty in the presentation of the archipelago—for the first time, the map shows the Philippines by itself. Its connection with New Spain is presented only through the iconography of the map, the Bourbon royal coat of arms in the cartouche, and the delineated trade routes that had been connecting the Philippines with Spain and Mexico for centuries.

Although compiled in the portolan style, Velarde's work is an untypical nautical chart. It includes only some of the nautical elements. Except for the most obvious ones, the compass lines, all the shallows are marked as well as anchorages, but there are no soundings that are important for safe navigation. However, the routes of the galleons are clearly marked: one toward Spain, which leads from Manila Bay, passes near Lubang Island, and continues in the westerly direction; and two routes toward New Spain, the first of which follows the Luzon's northern Cape of Bojeador (*Boxeador*), while the southern route passes through the heart of the archipelago, following the sea passages north of Mindoro Island (the Verde Island Passage), and continues south of Burias Island, leaving the archipelago through the San Bernardino Strait (between the islands of Samar and Luzon). The fourth route noted on the map, that of Magellan, has no nautical but only symbolic value, it is a reminder of the Spanish conquest of the region.

In addition to the nautical elements, Velarde's chart is supplemented with a detailed topography of the inland, which includes the presentation of the relief (pictorial presentation), the rivers and the traffic inland network, the Spanish towns as well as rural settlements of the local inhabitants. In regard of map content, nothing reveals the fact that it is actually a Jesuit map: only carefully recorded names of the local nations testify to the missionary nature of its author. An interesting note on the banderole that stretches across the channel between Mindanao and Bohol Islands (*Desde Samboangan hasta Caraga por el norte es de España)* makes a clear acknowledgment of the existence of an internal frontier, testifying that Spanish control did not extend to the Muslim sultanates in the south of Mindanao.

One of the very few critics of Velarde's chart refers to its calculation of the longitude. As Velarde did not leave a note about the prime meridian he indicates to, thus some of his contemporaries such as Nicolas Bellin, otherwise a great admirer of his work, were rather confused by his results (Pardo de Tavera 1894: 16). This is particularly referring to his calculation of the longitude of Manila (today calculated

[15]Carta Hydrographica y Chorographica de las Yslas Filipinas Dedicada al Rey Nuestro Señor por el Mariscal d. Campo D. Fernando Valdes Tamon Cavallo del Orden de Santiago de Govor. Y Capn. Hecha pr. el Pe. Pedro Murillo Velarde dla. Compa d. Ihs. Cathco. d. De Canones sobre los Mapas y Relaciones mejores que han salido, y observaciones del Author; delineavit Nicolas de la Cruz Bagay Indio [Tagalo en Manl. Año 1734]. Geography and Map Division, Library of Congress, G8060 1734.M8.

as 121°E of Greenwich) which Velarde placed at 158° 30′E.[16] Velarde's calculation, made from some unidentified prime meridian toward the east, did not correspond to any of the points where various European nations placed their prime meridians. The Paris Observatory calculated the position of Manila as 118°E of Paris. Most of the mapmakers of his time were referring to Tenerife, calculating the position of Manila as 137°E, while those referring to Ferro mostly defined its longitude as 138° 30′E. If we assumed that his calculation of the Manila longitude was correct, Velarde's prime meridian would be placed about 37°W of Greenwich, which does not correspond with any of the points then used as the prime meridian. That leads us to the conclusion that Velarde did not use some unusual prime meridian,[17] but simply made a considerable mistake in measuring the longitude of Manila, most likely from Tenerife, and then consequently of other places, which positions he derived from Manila's longitude. Last but not least, it should be mentioned that similar calculations of the position of Manila (about 155°E of Tenerife) can be found on most of the seventeenth-century French and Dutch maps (e.g., those of Gerhard Mercator, Jodocus Hondius, Jan Janssonius), which could have influenced Velarde to adjust his calculation to those prominent predecessors (as he did to Diaz Romero and Ghandia).[18]

4 Velarde's Sources and Compilation Methods

The crucial question is how Velarde compiled his chart. The title of the chart offers some information in that regard—Velarde noted that the chart was compiled based on the best available maps and reports as well as on the author's observations. Also, we know from Selga's notes that Velarde produced a large quantity of maps, which he could use as a source material, and based on which he compiled a chart of the whole archipelago. However, it is noted that Velarde also used the maps of other authors as a source of information. The most obvious proof of his use of older maps is his presentation of the Cagayan River, which was clearly based on de Acosta's map from 1720. More traces on Velarde's sources can be found in a detailed reading of his 1734 chart.

By comparing his chart with others of his Spanish contemporaries, Velarde's chart shows the strongest correlation with a 1730 chart by Enrique Hérman. This particularly refers to the presentation of the islands of Luzon, Mindoro, Samar and

[16]Velarde repeats the same calculation on the longitude of Manila in his *Geographica Historica*, Vol. VIII, p. 5.

[17]Choosing an unusual meridian was not so rare in early eighteenth-century Spanish maps. A testimony to that is Enrique Hérman's chart of the Philippines of 1730, which refers to a prime meridian close to the eastern edge of the Philippine archipelago, placing Manila at 356°E.

[18]As a response to Bellin's critique, Velarde tried to explain his calculation in the Prologo to his *Geographica Historica*, saying that he used the most punctual information from the pilots of the Philippines, and from the famous Fernando Magellan.

Leyte. Although Velarde considerably improved the outlines of the islands as well the outlines of Manila Bay and Manila Lagoon, Hérman's influence is clearly evident. The style of the presentation of the Manila galleon route is also obviously copied from Hérman. Moreover, the scales of their charts are also very similar (Hérman's ca. 1:1,219,000 and Velarde's 1:1,400,000). However, as much as Hérman's chart could serve to Velarde as a good starting point for the compilation of his own map, the 1730 chart that limited its scope only to the northern and central parts of the archipelago, excluding Mindanao and Palawan islands, could not serve him as a single source. Also, Hérman's chart offers no information on the inland. Thus, for the geography of the inland as well as for the overall presentation of Palawan and Mindanao islands, Velarde had to rely on another source, most probably the map of Admiral Francisco Diaz Romero and Sergeant Major Antonio Ghandia that appeared in 1727.[19] Compiled by Spanish Army forces just seven years before Velarde's chart, this map presents not only the Philippines but the whole East Indies. A much larger geographical scope of Romero-Ghandia's map resulted in a considerably smaller scale of 1:2,900,000. Still, Velarde definitely took some of the information from Romero and Ghandia, but not so much as we could expect. Despite its eloquence, the Romero-Ghandia map suffers from crucial defects in the presentation of the islands: Mindanao was represented as rectangular in shape and placed too far away from nearby Leyte island, while Dinagat island (northeast of Mindanao) was completely omitted. These shortcomings of the Romero-Ghandia map was the exact reason why the Spanish authorities assigned Velarde to compile a new map in rather short order. Moreover, the Romero-Ghandia map could serve to trace one of the biggest errors of Velarde's chart—the graticule of longitude. Just like Velarde, Romero and Ghandia made a substantial error in calculating the longitude. Probably referring to Tenerife as the starting point of their calculation (the prime meridian is not indicated on their map), they determined the longitude of Manila as 150°E, similar as French and Dutch cartographers did in the seventeenth century. Could that misleading information be a source of Velarde's even larger mistake in the longitude calculation? Quite possible. We do not have any evidence that Velarde made his own measurements of the longitude. In this sense, it is significant that his *Geographia historica*, in which he provides a geographical description of many places, does not contain a single coordinate except those for the town of Manila.

Most of the information on the inland was gathered by Velarde and his associates, probably Jesuit fathers with whom he was exchanging information. As a result of such knowledge exchange, Velarde was able to supplement his chart with abundant geographic information unknown to his contemporaries. That specially refers to the human geography of the islands which was only vaguely presented on previous maps. Numerous native settlements and names of the local nations could

[19]Carta Chorographica del Archipielago de las Islas Philipinas, delineada por el Almirante Don Francisco Diaz Romero, y Sargento Mayor d. Antonio d. Ghandia … J. á Palom. sculp. Mti anno 1727. Scale 1: 2 900 000. British Library, Maps 184.f.3.

not escape the Jesuit nature of this mapmaker and of his local informants. Sometimes they were subjective, a note on Mindanao island suggesting that the founder of the Society of Jesus, St. Francis Xavier visited the island during his missionary voyage through Asia (*Aqui estuvo St. Francisco Xavier*) clearly reflects the Jesuits' beliefs, which were not proved by historical sources. A rich island's hydrography is also noted for the first time and labelled with their names, as heard from the local natives, which makes this chart a valuable source for the history of the archipelago and its people.

5 The Iconography of Velarde's Chart

Apart from showing the topography of the archipelago, the chart had to make a strong statement in regard of the Spanish rule over the Philippines. However, even in this aspect of the chart, Velarde has a specific approach, again emphasizing local issues rather than the trans-Pacific connections of the Philippines. The iconography of the chart celebrates the Spanish history of the region on several levels: by textuality, by symbols, and by rich illustrations printed along the margin of the chart. The text printed on the medallion in the south-western part of the chart provides a very suggestive history of the archipelago, which glorifies the wealth of the islands and the success of the Spanish governance.[20]

[20]On 10 August 1519, Ferdinand Magellan left Seville, arrived in Cebu on 7 April 1521, and was killed on Mactan. Miguel López de Legazpi arrived in 1565, and on 24 June 1571 began founding Manila, the capital of the Philippines, named after Señor Felipe II. These islands are numerous and rich: they have gold, wax, sugar, honey, tobacco, ginger, indigo, sibucao or Brazil-wood in a variety of colours, siguey, balate, cotton, cacao, civet, shell, ima, sulphur, pitch, rice, salt, wheat, maize, lemons, oranges, bananas and many fruits and edible roots, palo Maria, tamarind, cassia trees, Catbalogan seeds, dragon's blood, lignum vitae trees, coconuts, bamboo, rattan and many kinds of palms, mahogany, tindalo and excellent timber for ships; horses, carabaos or buffaloes, cows, pigs, deer, chicken, and many fish.

In Mindanao, cinnamon and pepper grow wild; in some places there are pearls, amber, pinchbeck and iron. The land is very productive if it were cultivated.

They have an archbishopric and three bishoprics, one chancellor, three governments, twenty-one provinces or jurisdictions, eighteen presidios, an artillery foundry, factory of gun-powder, printing houses, etc.

The secular clergy have four dioceses totalling 142 towns and 131,279 souls. The Dominicans have fifty-one towns and 98,780 souls among the Tagalos, in Pangasinan and Cagayan. The Franciscans have sixty-three towns and 120,000 among the Tagalos and in Camarines. The Augustinians administer to Tagalos, Pampangos, Ylocos and Panay in 115 towns with 252,973 souls. The Jesuits administer to Tagalos, Bisayans and in Mindanao in eighty-eight towns and 160,199 souls. The Recollects have Mindoro, Caraga, Bisayas and Calamianes with 105 towns and 53,384 souls.

Remarkable is the growth and cultivation of these new Christians; they are ministered to in the Spanish language, in Tagalo, Sangley or Chinese, Pampango, Ilocano, Pangasinan, Cagayano, Bisaya, Camarines, etc.

In the northeast corner of the chart a great title cartouche is placed, again marked with a strong iconography: the Spanish coat of arms flanked each side by cherubs with a trumpet, from which a ribbon with inscriptions unflurs: ‘Tibi servit et ultima tellus’ (Even the furthest earth serves you) and ‘Pontus quoque subditur illi’ (The ocean likewise is subject to him). A title is inscribed on a curtain supported by two female allegorical figures. Surrounded with charts, an armillary sphere and other scientific instruments, these women personify geographical knowledge rather than particular geographies. Velarde’s chart uses allegory to assert its own technical sophistication, or the sophistication of the geographical sciences in Bourbon Spain (Padrón 2011: 55). Although the presentation of the routes to Acapulco and Spain should serve as a reminder to the Philippines’ trans-Pacific connection created by the galleons, the local leg of the journey visible on the chart is more in favour of the Southeast Asian trade than the trans-Pacific one. This assertion is further affirmed by numerous images of different sorts of ships that sail around the archipelago—a European-style ship marked ‘Patache para Canton y Macan’, and a Chinese junk labelled ‘Champan de China’ are actually reminders of Manila’s relationships with China and Portuguese Macao.

To reinforce the power of the chart, Velarde engaged an artist to illustrate his chart. Twelve exquisite illustrations—six on each side of the chart—that accompanied Velarde’s cartographic work significantly contributed to the glory of the chart, making it known not only as a reliable chart, but also as a remarkable piece of art. These illustrations were done by a different engraver, a Philippine artisan named Francisco Suarez, a native Tagalog (on the bottom of one of the images there is a note, *Fran’co Suarez, Yndio Tagalo, lo hizo*).

Four of the panels represent the images of the most important localities: Manila (the capital, based on Roxas’s map of 1730), Cavite (a shipyard and port that served the galleons), Zamboanga (a fortified town at Mindanao Island), and the Island of Guam (one of the way stations on Marianas Islands, important for the trans-Pacific trade). Three of the illustrations depict scenes from everyday life, one in the city and two in the country. The rest of them are ethnographic images that portray members of some of the colony’s major ethnic and racial groups: the Spaniards, Chinese, Armenians, Persians, Japanese, Indians, Mongols, mestizos, as well as members of the local nations of the Philippines.[21]

These twelve panels that surround the chart are much more than an illustration showing the scenes from daily life. By illustrating the cosmopolitan population of the early eighteenth-century Philippines, its author pays tribute to the success of the Spanish administration and the stability of Spanish rule over the region but also to the local society of the Philippines. However, once again, that intercultural diversity in

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The natives or Indios are well built, good featured, brown in colour, and much inclined to religion; to the Spaniards they are capable and turn out to be good writers, painters, sculptors, engravers, silversmiths, embroiderers, sailors, etc. [translation according Quirino (2010: 57–58)].

[21]For the full description of the illustrations, cf. Garcia (1734).

which Asian groups predominate (there is not a single Amerindian on the illustrations!), emphasizes the archipelago's relationship with Asia, not with America.

6 Subsequent Editions of Velarde's Cartographic Work

Exactly ten years after he had published his famous chart of 1734, Velarde prepared its second edition. Considerably smaller (only one-fourth of the size of the first edition), it was made to accompany Murillo Velarde's *Historia de la Provincia de Filipinas de la Compañia de Jesús.* Folded into the book, it was published by the Jesuit press in Manila in 1749 (Fig. 3). While Nicolás de la Cruz Bagay was still in charge of the printing, the person who engraved the map was another prominent artist, Lauretano Atlas, also a native Tagalog.[22]

For the purpose of the second edition, Velarde introduced some corrections into his chart. In regard of its geographical elements, the most obvious change was the exclusion of the compass lines and of the Manila galleons, thus turning his chart into a map. He also took the chance to correct some of the mistakes he noted after the publication of the first edition. E.g., in the presentation of the traffic communication in northern Luzon, he omitted the observation that men could travel by road along the valley of the Cagayan, and in three days reach that remote region because he found out that was not true. In the same time, he kept his graticule of longitude unchanged, thus still referring to Manila's longitude as 158° 30′E.

Some of the changes introduced to his second edition may reflect some political shifts in Velarde's microcosms: the cartouche with the Bourbon coats of arms—presented in his first edition—was now deleted and replaced by the medallion that earlier served to frame his historical note (placed on the lower left part of the first edition). The dedication to the Governor-General was also omitted as the incumbent official Gaspar de la Torre was neither liked nor respected by the Spanish colonials. In the place where the medallion was stud in the first edition, a new illustration was inserted—the figure of St. Francis Xavier, the prince of the seas, bearing the Jesuit flag attached to a cross, and riding on a shell pulled by seahorses and the apocryphal crab clutching a crucifix. Legend had it that Saint Francis had lost his crucifix in a sea storm that hit Malacca, and twenty-four hours later, while walking on a sandy beach at Mindanao, a crab emerged from the sea and returned the crucifix to Saint Francis (the same belief was illustrated in the first edition by a label inserted across Mindanao island).

Upon the Suppression, the old Jesuit printing house passed into the hands of the archbishop of Manila; it was reopened under the diocesan seminary of San Carlos, using the same machines and copperplates. The original plate of Velarde's map of

[22] Mapa de las yslas Philipinas hecho por el P. Murillo Velarde de la Compañia de Jesus. Map is folded in book, preceding the inner title page. The Research Library in Olomouc Czech Republic, V 51.797.

Fig. 3 Map of Pedro Murillo Velarde prepared in 1744 for his *Historia de la Provincia de Filipinas de la Compañia de Jesús* (Manila, 1749) (Courtesy of The Research Library in Olomouc Czech Republic)

1744 was still preserved when the Augustinian Recollect friar Juan de la Concepción decided to attach this map to his *Historia general de Philippines* (with all Jesuit symbols removed).[23] After the original of Velarde's 1744 map was rediscovered by the Jesuits in 1858, they restored the plate. From the same plate the National Library of the Philippines printed hundreds of copies in 1934, together with the illustrated panels of 1734.

7 The Influence of Velarde's Cartographic Work on Foreign Cartographers

Velarde's cartographic work was highly acknowledged by his contemporaries. His chart of 1734 as well as his map of 1744 were recognized as the most reliable presentation of the Philippines. Both of his editions, the 1734 and the 1744, were on sale in Manila, thus available to the general public.[24] However, his map of 1744 proved to be more often utilized by other cartographers than his chart of 1734. Although compiled in a much larger scale, his chart of 1734 was not so widely distributed as his map of 1744 folded in Velarde's book.

The cartographic work of Murillo Velarde exerted a big influence on European cartographers who used his maps as a source. While some of them acknowledged their debt to the Jesuit mapmaker, others just utilized Velarde's maps without indicating their source. Also, thanks to the high-quality information that Velarde offered in his maps, many of the publishers decided to reproduce Velarde's maps practically as a reprint, introducing only minor editorial changes into Velarde's original.

The first reflection of Velarde's cartographic achievements appeared in the Habsburg Monarchy that sent many Jesuits to the Spanish missions. Velarde's 1744 map was reissued as a reduced copy in Vienna in 1748 by Leopold Johann Kaliwoda (yet with a different cartouche and without acknowledgment of Velarde's authorship) who attached the map to a book on the Philippines,[25] and then again when a copy prepared by Kaliwoda appeared published along the Jesuit Relations on the Philippines in the *Der neue Welt-Bott* (vol. 26, 1748).

[23]Juan de la Concepción, Historia general de Philipinas: conquistas espirituales y temporales de estos españoles dominios, establecimientos progresos y decadencias … por el P. Fr. Juan de la Concepción, Recoleto Agustino Descalzo. Manila Impr. del Seminar, Conciliar, y Real de S. Carlos, por Agustín de la Rosa y Balagtas. 1788 y 1792. The map is folded at the end of the first volume.

[24]An inventory of the Jesuit press that was made at the time of the suppression identified that seven copies of the Velarde's maps remained for sale, one large edition (1734) and six copies of the small one (1744), priced at two and one and half reales (Quirino 2010: 68).

[25]Insulae Philippinae ex autographo Maniae. In: Francisco Colin, *Beschreibung deren Philippinische Inseln. Allerhand so lehr- als geist-reiche Brief/Schriften und Reis-Beschreibungen*. Bd. 4. Tl. 26.

While the appearance of the earliest European copies of Velarde's maps was related to Jesuit accounts, its further coping would be associated with warfare. The War of Jenkins' Ear, a conflict between Britain and Spain lasting from 1739 to 1748, spurred stronger British interest in the Philippines. When, in 1743, George Anson captured the Manila galleon *Nuestra Señora de Covadonga*, among other things, he took possession of several Spanish charts—probably also those of Murillo Velarde—and brought them to London.[26] When further political tension, where France, a close ally of Spain, was soon to be drawn into a global conflict with Great Britain (1756–1763), renewed the French interest in the maps of Spanish possessions, Velarde's map that Anson brought to London had already reached France. As the French Navy urgently needed updated sea charts of the Philippines, Jacques-Nicolas Bellin prepared a map of the Philippines for this purpose that was drawn directly from Velarde's 1744 map.[27] Although signed as the author of the map, Bellin acknowledged in a special note below the title cartouche that his map was based on Velarde's 1744 map, but not as its straight copy (*copie servile*) because "he supplemented Velarde's original with several additions." Ironically, Bellin's most obvious improvement was that of the mythical island of St. Jean, to the east of Mindanao, which appeared in earlier maps, but which Velarde went to great efforts to exclude from his maps. Shortly after the 1752 edition, Bellin prepared another edition of Velarde's 1744 map, printed in two sheets, to accompany his *Histoire générale des voyages*. This time, Bellin gave a proper credit to the original author of the map, mentioning Velarde's name in the title cartouche.[28] The same two sheets appeared in Bellin's *Le petit atlas maritime* (Paris, 1764).

[26]The information which exact charts were captured by Anson is rather contradictory. Anson explicitly mentioned several captured Spanish charts whose reproductions he included in his diary: a manuscript chart of the Pacific that corresponds with the 1710 original that is kept in the Archivo General de Indias, plans of Manila and Cavite, and a chart of the Philippines, which correspond with the 1730 chart by Enrique Hérman (Anson 1748: 236, 240, 286). Speaking about the same event, Murillo Velarde said that Anson captured his maps as well, and brought them to London (Velarde 1752: VIII, 76). However, it is highly possible that Anson actually plundered Velarde's chart as well but, due to its military importance, he decided to keep it confidential, and published it in a more appropriate place.

[27]Carte réduite des Isles Philippines pour servir aux vaisseaux du Roy: dressée au *Dépôt* des cartes, plans et journaux de la Marine. Par ordre de M. Rouillé, Ministre et Secrétaire d'Etat ayant le Départment de la Marine. Paris, 1752. The map was published within the *Hydrographie française* ordered by the Ministry of Marine.

[28]Carte des Isles Philippines, dressée sur la carte espagnole du R.P. Murillo de Velarde: I[te] Feuille, and Carte des Isles Philippines dressée sur la carte espagnole du R.P. Murillo de Velarde: 2[e] Feuille.

Velarde's work attracted the attention of German publishers as well. Georg Moritz Lowitz of Nuremberg copied the Velarde 1734 chart and, along with some editorial changes, prepared it for the publication in 1750.[29] This map was published by the Homann Heirs in 1760. The German publisher kept not only the note on Velarde's authorship, but also his original tribute to Fernando Valdés y Tamón, as well as the note about Velarde's engraver, Nicolás de la Cruz Bagay. In Italy, a copy of the Velarde 1744 map was published by Antonio Zatta as *Isole Filipine* (Venice, 1785), but without any acknowledgment of its author.

Apparently, Velarde's work did not receive much attention from Dutch cartographers, especially those of the VOC or related to it. In the early eighteenth century, the most acknowledged Dutch map of the Philippines was that of François Valentijn.[30] Published about 1724, his chart of the archipelago was probably based on sources from the VOC's archive of maps to which Valentijn had access.[31] Compiled ten years before Velarde's chart, Valentijn's work shows considerable shortcomings in the outlining of the islands. When Johannes II van Keulen (1704–1755), the official hydrographer of the VOC, published his famous maritime atlas in 1753, which is also known as The Secret Atlas of the Dutch East India Company,[32] for the presentation of the Philippines he included a chart that was still based on the outdated Valentijn's work (Fig. 4).[33] Having in mind that Velarde's chart was already known in Europe, Keulen's decision of not updating his chart of the Philippines with Velarde's information can only be justified in the context of his vigilance about not making the newest information widely available.

At the time of the Seven Years' War (1756–1763), England began the detailed charting of the Philippines and its waters. When the British forces occupied Manila

[29]Carte hydrographique & chorographique des isles Philippines (Dediée à Sa Majesté Catholique, par le Brigadier Don Ferdinand Valdes Tamon… Dressée par le R. Pere Pierre Murillo Velarde, de la C. de Gieusu sur les Cartes, les Rélations et les Navigations les plus exactes à Manille 1734. Par ordre de Sa Majesté. Tirée de l'Original, et réduite en cette forme par George Maurice Lowitz, Profess. en Mathem. à Nuremberg l'an 1750. Publiee par les Heritiers de Homann l'an 1760. L'Original est gravé par Nicolas de la Cruz de Bagay, Indien de Tagalos, à Manille l'an 1734.

[30]François Valentijn (1666–1727) was a minister, naturalist and writer who lived in the East Indies for sixteen years. He was first employed by the Dutch V.O.C. at the age of nineteen, where he served as minister to the East Indies. He returned to the East Indies once more in 1705, this time serving as Army chaplain on an expedition in eastern Java. Upon his final return to Europe, he wrote his *Oud en Nieuw Oost-Indiën* (1724–26), a massive work of five parts published in eight volumes and containing over one thousand illustrations, including some of the most accurate maps of the Indies of the time.

[31][Philippine Islands, Lucon of Luconia]. Amsterdam, 1724.

[32]The VOC had their own mapmaking office. During the first 150 years, only secret manuscript charts were used, to minimize the risk of spreading the knowledge to competitors. From 1753 onwards, a printed atlas was used, with printed charts to navigate the waters from South Africa to Japan. The atlas was produced by Johannes (II) van Keulen, official hydrographer to the VOC, and was officially known as Part VI of the Zee-Fakkel (Sea-Torch). The atlas is also known as the secret atlas because it was not sold and only used by VOC ships.

[33]Nieuwe Afteekening van de Philippynse Eylanden geleegen in de Oost-Indische Zee tusschen Formosa en Borneo. Amsterdam, 1753.

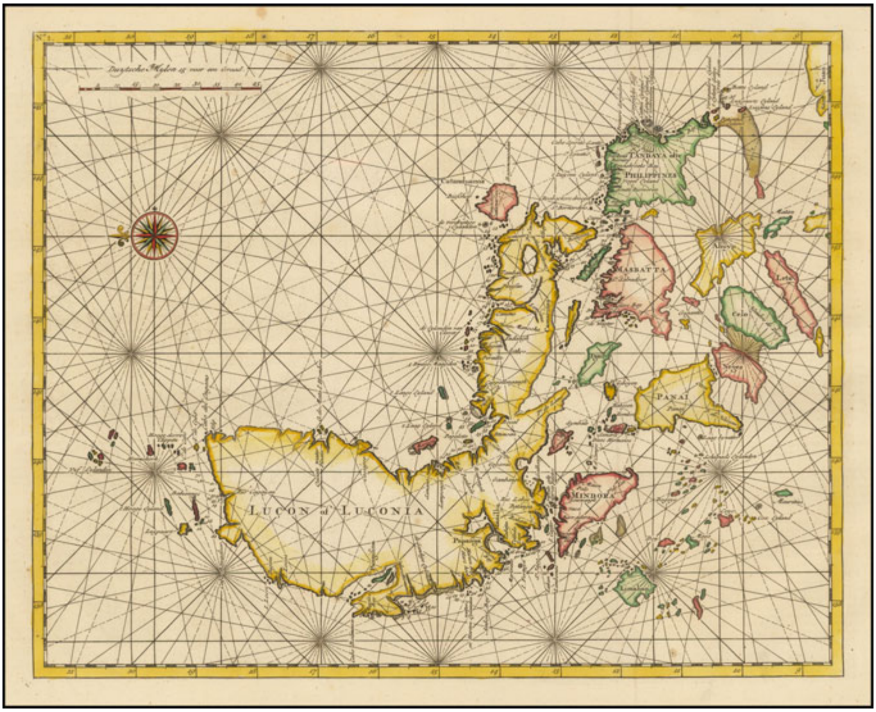

Fig. 4 Map of the Philippines and neighbouring islands by François Valentijn compiled in 1724. The same map, already outdated, was included in maritime atlas by Johannes (II) van Keulen (Amsterdam, 1753) (Courtesy of Barry Rudeman Rare Map Collection)

from 1762 to 1764, a copy of Velarde's chart came into British hands, and was used as an important source for the cartographic presentation of the Philippines until the late eighteenth century. Even more, William Draper, a British military officer who conquered Manila, took the eight copperplates of the 1734 chart, and brought them to London where they came into the possession of the Admiralty.[34] At the same time, British hydrographer Alexander Dalrymple was working on his own survey of the archipelago. As an officer of the British East India Company, Dalrymple made three voyages to the Philippines, Borneo and Sulu between 1759 and 1764 (Cook 1993: 20). Between October 1769 and the end of 1774 Dalrymple published a series of detailed charts, chiefly from observations in his voyages in the early 1760s, which included those of the Philippines. Apparently, at that time he had insight into some Spanish charts that he got from Don Manuel Galves, governor of Zamboanga, but Velarde's chart was not mentioned among them (Cook 1993: 77). However, in the later stage of his work, he got acquainted with Velarde's cartographic work.

[34]In 1762, two British plans of Manila appeared, one by William Nichelson, made in October 1762, and the other by Admiral Cornish and General Draper, taken in November 1762.

Fig. 5 Reprint of Murillo Velarde map by Alexander Dalrymple, London, 1794 (Courtesy of National Library of Spain)

In 1794, Alexander Dalrymple prepared a reprint of Velarde's 1744 map, giving full credit to its Jesuit author (Fig. 5).[35] In the same year another map appeared, which was published by Robert Laurie and James Whittle for the purpose of *The Complete East-India Pilot, or Oriental Navigator*. The chart of the China Sea and the Philippines, though based on a contemporary survey by Robert Carr[36] and other British navigators, still referred to Velarde's work as a reliable source which this chart was compared with (Fig. 6).[37] That is probably the biggest acknowledgment that Murillo Velarde could get. Even fifty years after his cartographic works were published, and despite modern hydrographic surveys and numerous charts being

[35]Mapa de las Yslas Philipinas = Map of the Philipin Islands hecho por el Pe. Pedro Murillo Velarde de la Comp[a]. de Jesus [London] Publish'd according to Act of Parliament by A. Dalrymple. National Library of Spain, MR/6/I SERIE 53/205.

[36]Captain Robert Carr was a veteran of numerous voyages to the Far East, two of which were in command of the East India Company Ship, Barwell. It is very likely that on one of those voyages, he would have returned with a chart of the Philippines made for his own use and offered it to the publishers of the East India Pilot, who would have included it in their next issue of the work.

[37]A Chart of the China Sea and Philippine Islands with the Archipelagos of Felicia and Soloo, Showing the Whole Tract Comprised, Between Canton and Balambangan, With the Soundings, Shoals, rocks, etc. Composed From an Original Drawing, Communicated by Captain Robert Carr, and Compared With the Map of Pedro Murillo de Velarde, Engraved at Manila in 1734, as Well as With the Surveys of Several British Navigators. London: Laurie & Whittle, 1794. National Library of Spain, MR/6/I SERIE 53/206.

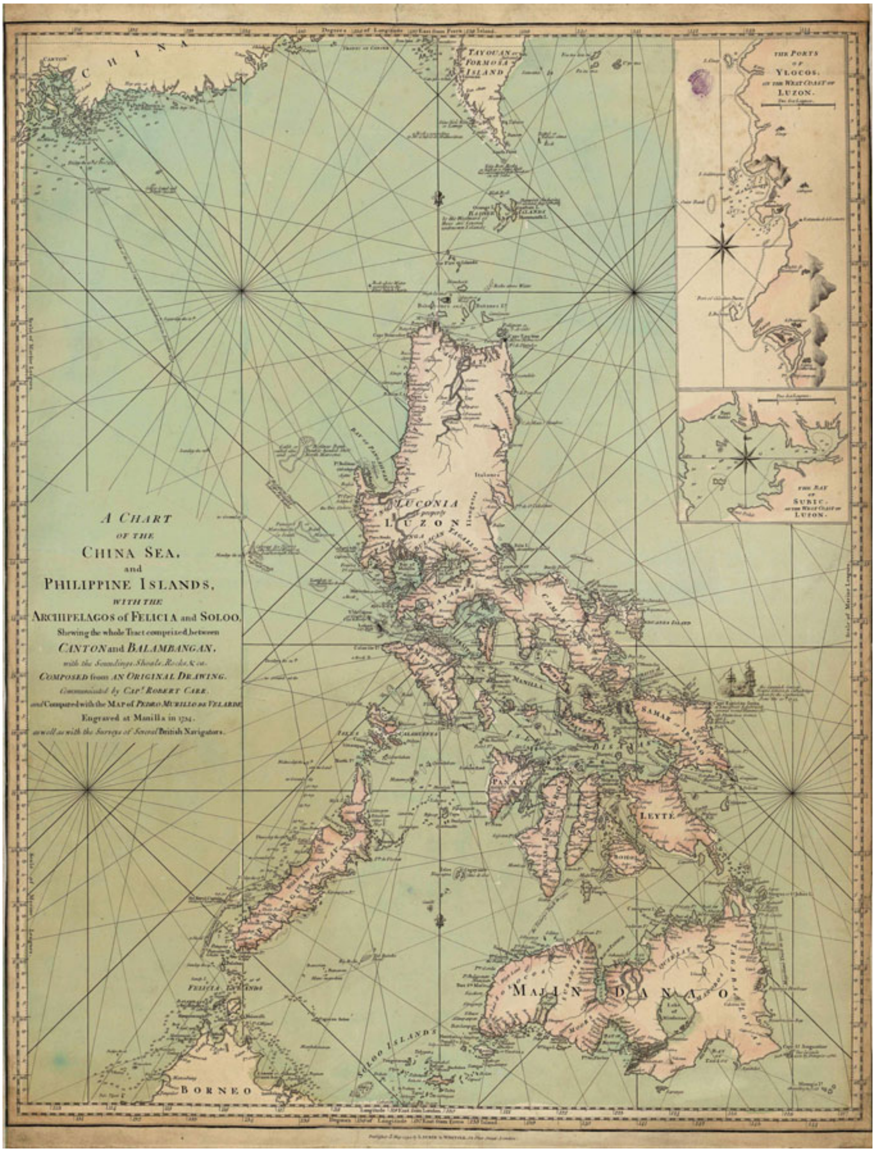

Fig. 6 Map of the Philippines published in The Complete East-India Pilot (London, 1794) based on a contemporary survey by Robert Carr and other British navigators, still referred to Velarde's chart as a reliable source (Courtesy of National Library of Spain)

published, his map was still considered as a source that needed to be consulted to ensure adequate accuracy of the presentation of the archipelago.

8 Concluding Remarks

Jesuit cartography was an important part of Spanish colonial cartography, even when it comes to maritime charting. An example of Murillo Verlade's chart of the Philippines certainly confirms it. His skill to gather various information from navy captains who sailed the Philippine waters and Jesuits who worked in missions scattered around the Philippine archipelago and put it all together into well balanced and mathematically based map, promoted Murillo Velarde among the most prominent Philippine cartographers of the eighteenth century. Until the appearance of modern charts by the British Admiralty, Velarde's chart was the best and most accurate image of the Philippines that strongly influenced the perception of the Philippines in all European cartographies. Devoted to Filipinos, Velarde rejected the Hispanic concept of the Philippines as part of the Americas and presented it as a world unto themselves, connected not only with Spanish territories but also with the rest of the Asia. With such new concept of the Philippines as a separate entity, he made a map that became a milestone of Filipino identity.

Although Velarde was well-known and highly appreciated by his contemporaries, nowadays we know little about his cartographic work. Velarde's famous chart of the Philippines makes only a small portion of his achievements. The fact that most of his legacy has been destroyed makes it impossible to evaluate the whole work of this extraordinary cartographer. The high achievement of his 1734 chart marks him as one of the most influential Jesuit cartographers of the early 18th century.

More recently, Velarde's chart of the Philippines has again been receiving a great deal of attention. Velarde's presentation of a coral reef in the Philippine waters, then known as 'Panacot' (today known as Scarborough Shoal or Panatag Shoal), is recognized as a piece of evidence debunking the claim of China, which today owns almost the entire West Philippine Sea (South China Sea). In that way, Jesuit cartography has once more proved its value not only as a historical document, but also as possible legal evidence proving the territorial integrity of the Philippines.

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Naming and Re-naming on Formosa: The Toponymic Legacies of the VOC Cartographies on the Eighteenth and Nineteenth Century Western Maps

Peter Kang

Abstract This paper examines the toponymic legacies of the seventeenth-century maps associated with the Dutch East India Company (VOC) on eighteenth and nineteenth-century European and North American cartographic works by looking at the case of the island of Formosa. The VOC produced the first maps of Formosa depicting not only the coastal contour of the entire island after a rough nautical survey, but also the inland details concerning the Austronesian settlements, when the island was partly under Dutch political and economic dominance. After the retreat of the VOC from Formosa in the mid-seventeenth century, the European map-makers relied on either the obsolete Dutch sources or their contemporary French Jesuit geographical knowledge sent back from the Manchu Empire for their cartographical works of the island. The predicament finally reached an end when the British Hydrographic Office of the Admiralty published their latest survey around the island in the mid-nineteenth century. Nevertheless, the map created by the Admiralty still employed some VOC toponyms, even though the French Jesuits had updated the geographical knowledge long before, in the previous century. Thus, the VOC toponymic legacies continued to survive, even side by side with the latest geographical information on a single map, on some cartographic works in the second half of the nineteenth century until the Japanese Empire took over the island and launched its island-wide reconnaissance.

1 Introduction

A place may obtain various names on different maps printed either at different stages or by different individual cartographers. This is obvious when we look at regional maps produced by the Europeans when they moved to Asia, and therefore *terra incognita* to them, beginning in the sixteenth century. Since then, one place may possess a documented name deriving from the imitation of the pronunciation used by local people, while at the same time it may acquire another name, for

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example, one embodying a commemorative purpose, with the latter also being assigned by Europeans. For instance, the sketch draft of the entire island of Formosa (present day Taiwan) made after Jacob Noordeloos' rough nautical inspection in the 1620s, today's Green Island in the Pacific Ocean and off southeast Formosa was given the name 'Mauritius'. The name was duplicated in the works of Jan van Braam and Johannes Vingboons afterwards. At the same time, the cartographers depicting the southern part of Japan, the Ryukyu Islands, Dutch Formosa, and the Spanish Philippines all on one single map tended to employ the name 'Tabaco Migúel' for the island instead. Nevertheless, Isaac de Graaf, as well as Johannes van Keulen afterwards, baptized it 'Sansana' (or 'Sanna Sanna' by van Keulen), after local Austronesian place-naming, in his cartographical work and this name survived on maps drawn in the nineteenth century, some two hundred years after the Dutch East India Company or VOC (*Vereenigde Oostindische Compagnie*) had left the area for, until the island obtained a dual name, *Hóe-sio-tó* (Bonfire Island) on the map drawn by the missionaries in the late nineteenth century. Thus, the paper intends to explore how the place names appearing on the cartographical works associated with the VOC in the seventeenth century survived in the following two centuries by taking the island of Formosa as a case study. Attention is given to how the place names employed by the VOC were preserved in the European and North American cartographical works in the following two centuries when updated, albeit more recent, if fragmented, geographical knowledge of the island was available to the Western map-makers.

2 The VOC Cartographic Works and Toponyms

Among all the cartographic works on Formosa, the Dutch were the first to produce maps that included the detailed topographic representation and toponyms, not only of the coastal areas, but also of the interior, after the VOC established a factory on the sandbar off the southwestern coast of the island in 1624. For instance, Jacob Noordeloos' *Chart of the Island of Taiwan* [*Caert vant Eijlant Packan*] dating from 1625 is believed to be the first map that portrays the entirety of the coastline of the island after a rough field survey (Gommans and van Diessen 2010: 212).[1] Johannes

[1]Also available on http://www.atlasofmutualheritage.nl/nl/Kaart-Formosa.6613. The Island of Formosa was also called *Pak-kàng* (*Packan*) by the Hokkien-speaking fishermen and traders from the southeastern coast of China, who constantly visited the island before the arrival of the Dutch. To the Hokkien-speaking people in the early seventeenth century, *Pak-kàng* could refer to the island as a whole, the central part of the island, or a river and its nearby area in the central part of the island. By using the name *Packan* rather than Formosa for the island, Jacob Noordeloos' sketch drawing ostensibly reflects the influence of the geographical knowledge of the Hokkien-speaking people in Taiwan on the early VOC map-making in terms of place-naming. For a detailed description and discussion of the VOC usage of place-naming by the Hokkien-speaking people in Taiwan on the contemporary documentary records and cartographical works, please refer to Kang (2017).

Nessel's *Map of Tamsuy and the surrounding villages, also with the islet Kelang* [*Kaartje van Tamsuy en omleggende dorpen, zoo mede het eilandje Kelang*] from 1654 is the first map that locates the inland Austronesian villages within today's Taipei area in North Taiwan in great detail (Gommans and van Diessen 2010: 238–239).[2]

The withdrawal of the VOC from Kelang (today's Keelung) in North Taiwan in 1668, after the Dutch surrendered its major headquarters on the southwestern coast, Fort Zeelandia, to Koxinga's invading forces in 1662, lead to a dearth of direct updated information on the island for the European map-makers. This paucity of information became even more acute when the Manchu Empire defeated the Kingdom established by Koxinga's successors on the southwestern part of the island in 1683 and adopted a quarantine policy toward Formosa. Nevertheless, the map-makers in Europe in the next century continued to produce new cartographical works pertaining to Formosa. We may roughly divide these maps into those drawn with access to, or by reference to, the VOC source materials and those without.

3 The Continuation of VOC Legacies in the Eighteenth Century

For those maps drawn by cartographers with access to, or referring to, the VOC source materials, we will take two cases here. The first one is the *Map of the Island Formosa and the islands of Pescadores* [*Kaart van het Eyland Formosa en de Eylanden van Piscadores*], printed in 1726 by Jan van Braam,[3] as a picture for Francois Valentijn's famous book *Old and New East Indies* (*Oud en Nieuw Oost-Indiën*) (Vertente et al. 1991: 128–129). One may feel surprised at the similarity between Van Braam's map and the *Map of the coast of Formosa and the Pescadores* [*Kaart van de kusten van Formosa en de Pescadores*] by Johannes Vingboons from 1665 (Gommans and van Diessen 2010: 215).[4] Jan van Braam apparently referred to his predecessor's works drawn in the previous century before adding more toponyms and contour details of areas along the coast in his work.

The second case is the *Map of the Chinese coast, along the Provinces Kwangtung (Guangdong) and Fukien (Fujian), also the Island Formosa* [*Pas-kaart van de Chineesche kust, langs de Provincien Quantung en Fokien als ook het Eyland Formosa*], by Johannes van Keulen in 1753 (Vertente et al. 1991: 92–93).[5] The striking features of the map are its locating of many inland Austronesian villages, as well as the delineation of the VOC exploration route crossing the

[2]Also available on http://www.atlasofmutualheritage.nl/nl/Kaartje-Tamsuy-Kelang.4602.

[3]Also available on http://www.atlasofmutualheritage.nl/nl/Kaart-Formosa.5896.

[4]Also available on http://www.atlasofmutualheritage.nl/nl/Kaart-eiland-Formosa.6670.

[5]Also available on http://www.atlasofmutualheritage.nl/nl/Kaart-West-China-Formosa-Pehoe.5895.

southern part of the central mountain range to the eastern coast of the island in search of the legendary gold deposits. Van Keulen's map is obviously not simply a duplication and modification of the work of any of his predecessors, since no similar sketch drawing including the aforementioned themes was left by the VOC. Even so, the making of Van Keulen's map surely relied heavily on the VOC source materials, left from about a century prior, in order to pinpoint those inland village names on his map.

4 The Updated Jesuit Geographical Knowledge in the Eighteenth Century

On the other hand, for those European cartographers of the eighteenth century who did not depend on the previously created VOC source materials for their cartographic works, it was the updated information the Jesuit sent back from the Manchu Empire of East Asia that provided the latest geographical knowledge of Formosa. Joseph de Mailla (1669–1748), a French Jesuit missionary in the Manchu Empire and commonly known by his Mandarin name Féng Bǐngzhèng 馮秉正 to the Chinese,[6] was entrusted by the Emperor Qianlong 乾隆 in 1714, along with fellow Jesuits Jean-Baptiste Régis and Roman Hinderer, to travel to the coastal areas of the empire, as well as to the island of Formosa, for a cartographical survey.

There were two distinctive features of the cartographic works of the eighteenth century which referred to the works of the Jesuit missionaries. Firstly, these maps would ultimately erase the VOC place names and replace them with new ones under the Manchu Empire. Secondly, the map-makers tended to portray only the western half of the island of Formosa, with both the interior region and the eastern coastal margin of the island represented by non-penetrable high mountain ranges. This is not entirely surprising, since the Manchu Empire was only able to exert its political jurisdiction on the western lowlands, and Joseph de Mailla and the other Jesuits were only able to conduct their investigation on the western plain areas. For instance, the map of *Province de Fo-kien* by the French Jesuit Jean-Baptiste du Halde (1674–1743), also known as Dù Hèdé 杜赫德 to the Chinese, merely depicts the western half of the island (Lu and Wei 2006: 90–91), following in the footsteps of his predecessor Joseph de Mailla, in his book titled *Description géographique, historique, chronologique, politique, et physique de l'empire de la Chine et de la Tartarie chinoise* in 1736.[7]

Attention should be given to those cartographical works which covered the entire island with more detailed toponyms such as *L'Isle Formose et Partie des Costes de la Chine* by Jacques Nicolas Bellin (1703–1722). Jacques Nicolas Bellin

[6]Joseph de Mailla was also referred to as Bé-là 買刺 in Hokkien, a linguistic borrowing from his surname Mailla (Lien 1962: 64).

[7]Also available on https://archive.org/stream/descriptiongog01duha#page/n29/mode/2up.

published the map around 1750 in Abbé Prévost's (Antoine François Prévost d'Exiles) book *Histoire générale des voyages*. It referred to the Jesuit sources for the western part and the Dutch cartographical works for the eastern part of the island (Lu and Wei 2006: 88–89). The piecing together of different source materials leads to the geographical knowledge originating from diverse time-spans coexisting on a single cartographical work.

Regarding the changing toponyms of the western part of Formosa, there are three major features in evidence on the cartographic works influenced by the Jesuit missionaries. The first aspect is the new administrative unit names in use under the Manchu Empire replacing the earlier Dutch ones, e.g., *Fort Provintia* being substituted for *Taiwan-fu* (Taiwan Prefecture). Secondly, some Austronesian settlements were given Sinicized names, e.g., *Favorlangh* turned into *Nan ché* 南社, meaning 'south village'. Thirdly, we see the addition of new geographical names for physical landscapes, e.g., *Schama Kiteu* or *Cha maki teou* being used for *Shamajitou* 沙馬磯頭, which was an oronym which never appeared in the VOC cartographical works but was used by the contemporary Hokkien sailors as a landmark.

As the updated geographical knowledge of the Jesuit missionaries spread throughout Europe, the VOC toponymic legacies gradually lost their ground in contemporary cartographic works and were largely confined to the territory lying outside the jurisdiction of the Manchu Empire, such as the island's eastern coast. Nevertheless, the central mountain range area, which was also beyond the control of the Manchu Empire, was left as a blank area or treated as an unknown inland area (e.g., *L'Intérieur de cette Isle n'est pas connue* or *Binnenste deeses Eilands is niet bekend* in Jacques Nicolas Bellin's *L'Isle Formose et Partie des Costes de la Chine*), even though Johannes van Keulen had pinpointed some place names in the central mountain areas in 1753 by referring to the VOC source materials.

5 Von Siebold and the Last VOC Toponymic Legacies in the Nineteenth Century?

Moving into the nineteenth century, the veil of mystery surrounding what had until then been the lesser known eastern coast of Formosa was gradually drawn back further still, especially after 1850, when the British Hydrographic Office of the Admiralty published *Formosa Island: the North and East Coasts from Surveys and Sketches by Capt. R. Collinson and Lieut M. Gordon R. N.* based on survey done in the year 1845 (Fix 2014: 47).[8] At roughly the same time, when Philipp Franz Balthasar von Siebold published his *Chart of the Chinese Coast and of Formosa* (*Kaart van de Chineesche Kust en van Formosa*) in 1849, he encompassed the

[8]Available on https://rdc.reed.edu/c/formosa/s/r?_pp=20&query=Admiralty&s=8e794e11ce0e92eb6a4cb1955dce1edf868547a7&p=1&pp=1.

entire island with place names from the seventeenth-century Dutch sources (Gommans and van Diessen 2010: 240–241). Von Siebold's map was probably the last cartographic work preserving the VOC toponyms for the entire island of Formosa.

We may consider the VOC toponyms employed by Von Siebold for areas along the coastal areas of Formosa in his work as being exhaustive, when we take into account his map's scale of approximately 1:1,204,500. South of *Jockan*, there is a place name *Brouwershaven* commemorating the shipwreck of the yacht *Brouwershaven* in August of 1633. The sinking was a well-known incident in the 1630s, making the yacht's moniker a sensible choice for naming the place where it had occurred at that time. Other commemorative place names such as *Golden Lion Island* (*Goude Leeuwen Eiland*) for today's *Sió-liû-kiû* 小琉球, and *Murderer's River* (*Moordenaars Riv.*) for today's *Chiong-kun River* 將軍溪 were intended to recall VOC tragedies in 1622 and 1628, respectively. Other place names that reflected descriptive significance or the orientational landmarks situated around the island and would have made sense to VOC sailors in the seventeenth century, such as *Small Sand Dunes* (*Kleine Zandduinen*), *Devil's Cape* (*Duivelshoek*), *N.E. Cape* (*N. O. hoek*), *Rocky Cape* (*Klippige hoek*), *East Cape* (*Oosthoek*), *Southeast Cape* (*Zuid-Oost-hoek*), *Turtle Bay* (*Schildpadsbaai*), and *South Cape* (*Zuidhoek*) were still employed on this map which was published around 200 years later.

We may conclude that Von Siebold referred to his predecessor Johannes van Keulen's *Pas-kaart van de Chineesche kust, langs de Provincien Quantung en Fokien als ook het Eyland Formosa* for locating toponyms such as *Brouwershaven* and *Mariaksal* on his work. Nevertheless, unlike Van Keulen, Von Siebold did not emphasize the inland Austronesian settlements, as had been the case in the seventeenth century. For instance, Sinkan, Mattau, Soulang, and Backloan are the four major Austronesian villages on the southwestern coastal plains, and all interacted closely with the VOC headquarters at Fort Zeelandia on Formosa. However, Von Siebold's map only denoted two of them, *Matua* (Mattau) and *Riv. Soulang*, with Soulang being located near the river bearing the same name. As for Mattau, Von Siebold treated it as an area, opposed to a village per se, by putting it next to *Murderer's River* rather than pinpointing the precise location of the village. He probably did this to underline the fact that the alleged 'murderers' were from the village of Mattau.

Von Siebold's map containing the panoply of the VOC toponymic legacies might have overlooked the four Austronesian villages which had strong connections with the VOC during the seventeenth century, but Von Siebold's nineteenth-century map-making contemporaries miraculously 'recovered' them, or at least some of them, albeit in a different way.

6 *Formosa Island* by the British Hydrographic Office of the Admiralty

In 1850, the Hydrographic Office of the Admiralty published *Formosa Island* based on the surveys and sketches by R. Collinson and M. Gordon R. N. done about five years previously. It was supposed to provide the latest hydrological information about the areas along the coast of Formosa, as well as the place names, since the latter served as important landmarks for hydrographic measurement and description. There is no doubt that *Formosa Island* depicted the coastline and the general contours of the island far more precisely than its predecessors had done. It also updated the coastal toponyms with the nineteenth-century ones by substituting, for instance, *Soo-au Bay* for *Baai van St. Laurens*, *Foki Pt.* for *Noort Caep*, and *Paksa Pt.* for *Kleine Zandduinen*.[9]

Not all the geographical knowledge in *Formosa Island* is based on the updated survey. The Hydrographic Office of the Admiralty distinguished the difference by meaning of shading. The unshaded parts, mainly in the middle and along the southern part of the coast, were taken from the previous cartographical works. Some inland place names on the southwestern plains, especially the settlement names were direct artifacts of the VOC legacy. For instance, we had *Favor Langh*, which had long ago been replaced by the tag *Nan ché* in the eighteenth century, if the map-makers had followed the Jesuit information, on the map *Formosa Island*. As for the four major Austronesian villages, namely *Mattau*, *Bacco Livan* (i.e., Bakloan), *Soulang*, and *Zinckham* (i.e., Sinkan), on the southwestern coastal plains, harking back to the heyday of Dutch Formosa, the Hydrographic Office of the Admiralty pinpointed all of them, and further added a fifth one, *Machinom*. *Machinom* comes from *Machinan* on Van Keulen's map. The VOC source materials noted this tiny village in the 1630s, and later the Dutch missionaries treated it as an annex to the aforementioned four major villages, for the convenience of religious instruction.[10] Among all the VOC cartographic works, *Machinan* only appears on the map by Van Keulen, partially because of its transient documentation record in the VOC archival sources, as well as its lesser significance in terms of population size.

We may justify the use of VOC toponymic legacies by the Hydrographic Office of the Admiralty by conceding that their application was limited to inland settlements, which are not essential for hydrographic landmarks. The representation of the inland landscape with toponyms that were in existence about 200 years previously should in no way be construed as a deliberate attempt to be misleading.

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[9]For the detailed history of the British Surveys of Formosan waters, please refer to Fix (2014).

[10]The letter of Governor Van der Burch to the Batavia authorities dated 17 October 1637 reveals that clergyman Robert Junius was enthusiastically persuading the inhabitants of Magkinam (i.e., Machinom) to visit Bakloan or Sinkan to receive his instruction (Campbell 1903: 159). Magkinam was said to have 68 persons in Baccluangh (i.e., Bakloan), a bigger village with 910 inhabitants, to observe the church service on a Sunday in February, 1638 (Blussé et al. 1986: 403).

However, contemporary cartographers would nonetheless have regarded the maps published by the Hydrographic Office of the Admiralty as being authoritative, and they would have served as important sources of reference. The duplication of geographical knowledge less known to the subsequent map-makers had the potential to ultimately lead to chaotically inaccurate spatial information if these cartographers simply carried on blindly without considering the accuracy and credibility of these earlier maps.

7 Matthew C. Perry's Black Ships

In the summer of 1853, four warships of the US Navy under the command of Matthew C. Perry reached the bay at Edo and marked the reopening of Japan to trading activities with Western nations. The contemporary Japanese commonly described the arrival of Perry's fleet and the associated events as the incident brought about by Black Ships (kurofune 黒船). Perry's fleet returned to Japan in 1854. Before reaching Japan for his second visit, Perry anchored off North Formosa and landed on the island to investigate the potential mining of coal deposits near Kelang. Perry's expedition later turned out to be included in Francis Lister Hawks' *Narrative of the Expedition of an American Squadron on the China Sea and Japan* in 1856, which contained the map *The Island of Formosa* sketched by James Ackerman (Lu and Wei 2006: 114–115).

At first glance, one might be excused for thinking that James Ackerman's map *The Island of Formosa* is actually the same as the map *Formosa Island* published by the British Hydrographic Office of the Admiralty. Not only the outline of the island, but also the mountain reliefs and the place names of both maps, seem to be identical. Nevertheless, a closer examination reveals a minor difference between the two maps. As for our concern about the VOC toponymic legacies, *The Island of Formosa*, for instance, merely located *Mattau*, *Soulangh*, and *Zinkhan* (i.e., Sinkan) on the southwestern coastal plains.

We don't know why James Ackerman merely kept three of the five villages for his cartographic work, but it is certain that *The Island of Formosa* was not the last chart that pinpointed those VOC place names. Table 1 provides a detailed list of the nineteenth-century charts that preserved the VOC toponymic legacies. Among them, three distinctive charts in the second half of the nineteenth century deserve our particular attention, as they maintained the VOC legacies at the great expense of their contemporary accuracy.

Table 1 List of maps in the second half of the nineteenth-century that copied the VOC toponymic legacy from the 1850 Admiralty Chart (from North to South)

Year: 1850	1856	1864	1870	1873	1874	1875	1884	1886	1893	1895
The Admiralty chart	A	B	C	D	E	F	G	H	I	J
Gilim	✓	✓								
Wassiboan	✓	✓								
Favor Langh	✓	✓								
Kalcken I.	✓	✓								
Mattau	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Baccoluan		✓	✓	✓	✓	✓	✓		✓	✓
Soulang	✓	✓	✓	✓	✓	✓	✓		✓	✓
Machinom		✓								
Zinckham	✓	✓	✓	✓	✓	✓	✓		✓	✓
Tayowan	✓	✓								
Haccam	✓	✓	✓	✓						✓
Wantcam	✓									
Tackeyan	✓									
R. Tollatock	✓									

A: *The Island of Formosa* (Ackerman 1856)
B: *Sketch map of the island of Formosa* (Swinhoe 1864)
C: *Formosa Island and the Pescadores, China* (Le Gendre 1870)
D: *Sketch Map of Southern Formosa* (Thomson 1873)
E: *Map of Formosa* (Ravenstein 1874)
F: *Island of Formosa* (Bax 1875)
G: *Karte von Formosa* (von Le Monnier 1884)
H: *Map of Formosa* (Guillemard 1886)
I: *The island of Formosa with special reference to its resources and trade* (Hosie 1893)
J: *Island of Formosa* (Mackay 1895)

8 Two Coastal Lines, Misplacement, and Vanishing Christian Settlements

Fourteen years after the map *Formosa Island* was published by the Hydrographic Office of the Admiralty, Robert Swinhoe, an English biologist and also the first European consular representative to the island of Formosa, published his *Sketch map of the island of Formosa* in the year of 1864 (Swinhoe 1864: 6).[11] Due to his advantage of being personally on the island, Swinhoe's chart was the first among his contemporaries to locate the local administrative areas under the Manchu

[11]Also available on https://rdc.reed.edu/c/formosa/s/r?_pp=20&query=Swinhoe&s=613013bcafc94a920a84ff10d9079d00ef09ea66&p=1&pp=1.

Empire, namely Tamsuy, Komalan, Changwa, Kia-e, Taiwan,[12] and Fungshan. His *Sketch map* also clearly distinguished the Austronesian territory from those under the Manchu Empire by using the tag 'Aboriginal' on the eastern half of the island. Like James Ackerman's map for Perry's Black Ship adventure, the island contour on Swinhoe's chart was mostly drawn after the *Formosa Island* one published by the Hydrographic Office of the Admiralty. Since the *Formosa Island* map utilized obsolete charts for the southwestern part of Formosa, Swinhoe would have surely found it difficult to match that part of the island with the coastline he saw during his days there. The result is the arrangement of two coastlines, especially around the latitude of 23° north.

The placing of VOC toponymic legacies based on the work of the Hydrographic Office of the Admiralty also engendered their translocation onto the nineteenth-century charts, since those obsolete place names had never been correctly located on the charts before. Swinhoe's *Sketch map* did offer a good updated geography of place names under the Manchu Empire, such as Changwa, Port Kok-si-kon, Tai-wan-foo, Ar-kon-lien, and Ta-kau-kon. Nevertheless, the placing of VOC toponymic legacies on his map turned out to be a disaster. Thus, we had *Gilim*, *Wassiboan*, *Favor Lang*, *Kalcken I.*, *Bacco Livan*, *Mattau*, *Zinckham*, *Soulang*, *Machinom*, *Tayowan*, and *Haccam*, all from the *Formosa Island* map being located about 50–60 km north of their actual locations. In addition, since Swinhoe also had the latest coastal place names on his work, the coexistence of up-to-date and obsolete place names for the same identical spots was inevitable, in which cases the contemporary place names were correctly positioned, but the VOC legacies were not. For instance, *Haccam* was drawn to be where Tai-wan-foo was under the Manchu Empire. We are able, however, to observe both place names on *Sketch map of the island of Formosa*, with the two localities being located about 15 km away from each other.

The most striking example would be John Thomson's *Sketch Map of Southern Formosa* in *Notes of a journey in southern Formosa* published in 1873 (Thomson 1873: 97).[13] Thomson, one of the pioneering photographers who traveled to the Far East and documented the local people and landscapes, visited the island of Formosa with the missionary James L. Maxwell in 1871. They traveled to the Austronesian villages on the western plains, such as Pao be, Baksa, Kamana, La-ko-li, La-lung, Pa-ah-liau, and Kasanpo. Thomson later carefully pinpointed those villages and the

[12] *Taiwan* here was referred to as the administrative area name, which is around today's Tainan area, rather than the entire island. The place name *Taiwan*, as a matter of fact, was first used to refer to the place where the VOC erected its headquarters, Fort Zeelandia, and was written down as *Tayouan*, after *Tâi-oân* in Hokkien, in the seventeenth century, rather than referring to the entire island. Later, the place name *Taiwan* was mostly used to describe that part of the island where most of the Hokkien-speaking immigrants dwelled, as well as the entire island, in the following two centuries. Thus, the area around the old Fort Zeelandia was called the Prefecture of Taiwan under the Manchu Empire. The term *Formosa* was still employed by the Europeans and North Americans to refer to the entire island until the early Cold War era.

[13] Also available on https://rdc.reed.edu/c/formosa/s/r?_pp=20&query=Thomson&s=2f4d055228ac157b4a09f02ce194f3dc5b242c0b&p=1&pp=1.

route of their inland trip in his *Sketch Map*. He also located a village called *Koo-sia*, meaning 'old (Austronesian) settlement', just east of Tai-wan-Fu (Taiwan Prefecture). All the aforementioned Austronesian villages were where the descendants of the occupants of the four major Austronesian villages in existence during the heyday of Dutch Formosa lived in the late nineteenth century. *Koo-sia* was the site where one of the four major Austronesian villages, namely Sinkan, was once situated in the past. The rest of them were settlements that were newly established after the four major villages saw their populations wane and gradually disintegrated. Nevertheless, Thomson could not resist drawing on the authority of the Admiralty chart by putting *Nattau*, *Baccolwan*, *Soulang*, *Zinklan*, and *Haccam* on his cartographic work, and it thus yielded a map with the obsolete VOC legacies co-existing alongside the more recent toponyms from his updated field survey.

Since the duplication of VOC toponymic legacies based on the Admiralty chart was widespread among some nineteenth-century map makers, then what we see in *Island of Formosa* published by George Leslie Mackay, the first Canadian Presbyterian missionary to northern Formosa, in his book *From far Formosa: The island, its people and missions* should not surprise us. The book was published in the year 1895, at which point Mackay had been living on the island for more than twenty years (Mackay 1895: 40).[14] As a priest doing missionary work, Mackay was able to draw a map displaying this very detailed geographical knowledge, so we see the contemporary settlement names, such as King-bi, Tchatoken, Tchin-ten-ka, Sintiam, Ku-chu, and Chimkoey in North Formosa, all situated along the river flowing down from the high mountains, where the missionary activities were spread. Mackay also pinpointed the local agricultural products or economic activities on his *Island of Formosa*, which offers us a window to the economic geography during his era. Nevertheless, his chart also presented us with the VOC toponymic legacies such as *Nattau*, *Baccolvan*, *Soulang*, *Zinklan*, and *Haccam*, most of which were no longer existed on the contemporary landscape, just as his predecessors had done.

It is in the same year that Mackay published his map, the Japanese Empire seized Formosa from the hands of Manchu Empire. The subsequent introduction of the island-wide inspection for a new era of modern colonial rule ultimately marked the end of the VOC toponymic legacies on the nineteenth-century European and North American maps.

[14] Also available on https://rdc.reed.edu/c/formosa/s/r?_pp=20&query=Mackay&s=0d862251abca03da15133f90bcc0d7417b933ccd&p=3&pp=1.

9 Conclusion

The VOC produced the first cartographic work of the whole island of Formosa, as well as its inland interior, in the seventeenth century. Good illustrations are seen in Jacob Noordeloos' *Caert vant Eijlant Packan* from 1625 and Johannes Nessel's *Kaartje van Tamsuy en omleggende dorpen, zoo mede het eilandje Kelang* from 1654. After the retreat of the VOC from the island, the European map-makers in the following centuries either relied on the VOC source materials, ranging from charts to documentary sources, or looked to the latest geographical knowledge sent back by French Jesuits doing missionary work in the Manchu Empire, for their mapping of Formosa. Both Jan van Braam's *Kaart van het Eyland Formosa en de Eylanden van Piscadores* in 1726 and Johannes van Keulen's *Pas-kaart van de Chineesche kust, langs de Provincien Quantung en Fokien als ook het Eyland Formosa* in 1753 prove how the VOC source materials were still widely used for map-making. On the other hand, the French cartographers such as Jean-Baptiste du Halde and Jacques Nicolas Bellin tended to follow the charts made by Joseph de Mailla, replacing old place names with updated ones, and either leaving the area beyond the jurisdiction of the Manchu Empire (mainly the central mountain range and the eastern coast) blank or labeling it with the VOC toponymic legacies.

The practice changed somewhat after the Hydrographic Office of the Admiralty published its updated chart of Formosa in the mid-nineteenth century, following its nautical surveys around most of the island. Nevertheless, the southwestern coast of the island was still described by borrowing from the VOC charts, and the application of VOC toponyms onto the new map was the solution. Among those place names, the four Austronesian settlements near the VOC headquarters, Fort Zeelandia, were the most popularly used ones. They were later adopted without much question for the chart prepared for the report of the Commodore of the U.S. Navy, Matthew C. Perry. Later, when people like Robert Swinhoe, John Thompson, and George L. Mackay, all of whom had stayed on Formosa, published updated reports of the island's geography based on first-hand experience, the charts in their reports inevitably displayed the place names of the aforementioned four Austronesian settlements mentioned during the heyday of Dutch Formosa. The outcome was the co-existence of the updated and the obsolete geographical information on the same maps. We thus see either the awkward arrangement of two alternative coastlines or the juxtaposition of the misplaced old settlements alongside the more correctly located contemporary ones, both situations being the result of cartographers accepting the authority of previously drawn charts without questioning their accuracy and credibility.

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Localizing Asia: Mapping Japan, Asia, and Europe in the Early Modern World

Sayoko Sakakibara

Abstract For Japanese intellectuals, the encounter with European geography in the mid-sixteenth century meant more than a simple, physical dilation of the world. More profoundly, it meant overthrowing the traditional Buddhist worldview. In the process of confronting a greatly expanded set of continents, educated Japanese had to fundamentally transform their understanding of Asia. Since the ninth century, the prototype of the world for most Japanese had consisted of Three Sacred Countries —*Tenjiku* 天竺 (India), *Shintan* 震旦 (China), and *Honchō* 本朝 (Japan)—surrounded by numerous minor lands. In a traditional world map, the bulk of the world consisted of India and China, which were always depicted in the center. By contrast, Japan was located to the northeast as one of many peripheral countries. One mission of ancient and medieval monks had been to overcome this miserable situation and articulate Japan's sacredness if not superiority in the world. In the context of this longstanding challenge, the arrival of European atlases and world maps presented an opportunity as well as a threat. Armed with new knowledge of the globe, some Japanese cartographers leapt at the chance to relativize the position of China and India. Others altered their maps more slowly, and with more reluctance. By illuminating the geographical imagination embodied in early modern world maps, this paper explores the impact of this process on Japan's traditional Asia-centric worldview.

1 Introduction

The word *sekai* 世界, or the world, has existed in Japan since the ninth century. It was first recognized as the continuity of time and space in the Buddhist context —'*se* 世' referring to time (past, presence, and future), and '*kai* 界' referring to space (north, south, east, west, top and bottom) (*Bunka shūreishū* 文華秀麗集, 818). Later it began to refer to the whole general space that human beings were

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living in and surrounded by (*Taketori monogatari* 竹取物語, end of ninth—beginning of tenth century, and *Kagerō nikki* 蜻蛉日記, ca. 974). In *Vocabulário da Língua do Japão*, a Japanese-Portuguese dictionary compiled in 1603–04 by Jesuit missionaries, *sekai* is defined as 'Xecai (*sekai*). Sahā lokadhātu [the enduring World]'. The Sanskrit term 'sahā lokadhātu' means Jambudvīpa or the Three-Thousand Large Thousand-fold World, which concretely refers to the Buddhist historical and spatial continuity around the Three Sacred Countries—*Tenjiku* 天竺 (India), *Shintan* 震旦 (China) and *Honchō* 本朝 (Japan; meaning 'this kingdom').

Since the eighth century, Japanese cosmology had been solely based on this Buddhist understanding of the 'world'—both geographically and philosophically. For Japanese intellectuals, therefore, the encounter with European geography in the mid-sixteenth century meant more than a simple, physical dilation of the world. More profoundly, it meant overthrowing the traditional Buddhist notion of the cosmos and the earth. In the process of confronting a greatly expanded set of continents, educated Japanese also had to fundamentally transform their understanding of Asia.

By illuminating the geographical imagination embodied in early modern world maps, my paper explores the impact of this process on Japan's traditional Asia-centric, Buddhist worldview. In doing so, I trace in world maps how early modern spatial perceptions came to be formulated in relation to the debate over the new worldview among Japanese intellectuals in the Tokugawa period 徳川時代. This process in turn elucidates how modern Japan re-connected itself to Asia and the world.

2 Medieval Prototype of the World

Our starting point is the prototype (Fig. 1) of the Japanese world map before the encounter with Western cartography. Since the ninth century, as mentioned above, the Buddhist world had been considered as basically consisting of Three Sacred Countries surrounded by numerous minor lands (*zokusan hendo* 粟散辺土), literally meaning 'peripheral lands like scattered millet'. The pivot of this type of map was India, which was depicted in the center of the world island. China is also included in Jambūdvīpa and partly occupies the center of the world. The most remarkable point in this map is that Japan is located to the northeast of Jambūdvīpa as one of the peripheral countries. This represents the fact that Japan, in the theory of Three Sacred Countries, was absolutely peripheral like a grain of millet floating in the corner of the ocean.

Here I would like to trace such a prototype back to the medieval worldview in Buddhist maps, especially exploring how the Japanese people of this period depicted the realms beyond Japan, and how the relationship between Japan and other countries was explained in the maps. *Go-Tenjiku zu* 五天竺図 [Map of Five Indias] drawn by a monk named Jūkai 重懐 in 1364 based on Xuanzang's 玄奘

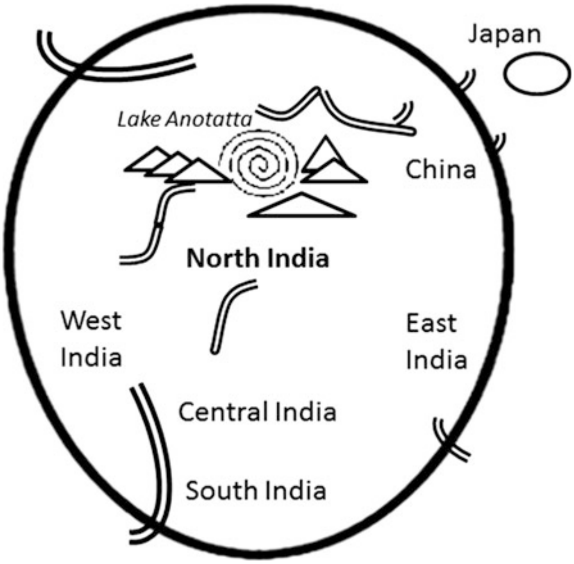

Fig. 1 Prototype of the Buddhist world map

Da Tang Xiyu Ji (646) is the oldest extant Japanese Buddhist ‘world map’. The original copy of this map is the one 大唐西域記 owned by Tō-ji 東寺 in Kyoto. The format of the five-Indias map is not an original Japanese creation but a slightly revised copy of a map made in China, which is called *Shintan* based on the model of the Three Sacred Countries (Unno 1994: 374). The map of Jambūdvīpa in *Fajie anli tu* 法界安立図 (1607) by Renchao 仁潮 represents this Chinese concept of the Buddhist world, which formed the foundation of Japan’s earliest world map.

Buddhism in Japan entails concrete spatial views about the universe, and with its arrival in the sixth century through Korea, the basic structure of the world was clearly laid out. According to doctrines transmitted to Japan from China and Korea, there is a tall mountain, called Sumeru in Sanskrit (*Sumi* or *Shumi* 須弥 in Japanese), at the center of the universe. It is located in the middle of a flat circular earth, around which the sun and the moon revolve. At the foot of the mountain, there are seven basins of water and eight mountain ranges alternating in concentric circles. Between the seventh water basin and the eighth range, there is a broad stretch of brackish ocean, in which there are four continents with different shapes to the north, east, south and west. The area where human beings live (i.e. the whole world for human beings) is the southern continent, *Nansenbushū* 南瞻部洲, which is equivalent to Jambūdvīpa. In *Go-Tenjiku zu* and other maps based on the same prototype, India and China are depicted far more precisely than Japan. Yet the description does not necessarily reflect the real international relations of the period. Rather, these maps focus on historical and religious information in order to emphasize the spatial sacredness of India and China that had been represented in earlier Buddhist tales. As mentioned above, this was what the word ‘*sekai*’ originally meant. How, then, did the concept of the world begin to change?

3 Re-conceptualizing the World

In 1543, the Portuguese arrived on the island of Tanegashima 種子島, the southern end of Japan. Four years later, Francisco de Xavier (1506–1552) came as a missionary of Christianity. The Japanese at that time considered their European visitors to be Indians. Ōuchi Yoshitaka 大内義隆 (1507–1551), a daimyo from Suō Province 周防国 (present Yamaguchi Prefecture), in a letter of 1551 permitting Xavier to missionize in Suō wrote, "A monk came to our country from the west in order to foster Buddhism" (João Rodrigues *Historia da Igreja de Iapam*, 1600s). At that time, 'the west' generally meant India, which was located west of Japan where Buddhism originated. Such a view can be commonly seen in the Japanese perception of foreign areas. Referring to the visit of Jesuit missionaries in 1571, Oda Nobunaga 織田信長 (1534–1582) also referred to them as "monks from India." (Luis Frois *History of Japan*, late sixteenth century) Furthermore, concerning a weird-looking man from Mt. Haguro 羽黒山 of Dewa Province 出羽国 (present Yamagata and Akita Prefectures), he said, "Are they Chinese, or Indians? There is no other place than the [Buddhist] Three Sacred Countries (i.e., India, China and Japan) where human beings can be born. Otherwise, they must be monsters" (*Shinchō Kōki* 信長公記, early Edo period). As these episodes clearly show, the general perception of the world in mid-sixteenth century Japan was based on a Buddhist understanding. However, these Jesuit missionaries took the limited geographical knowledge of the Japanese as an opportunity to introduce Christianity by attracting the Japanese with their 'new' geographical information about the world, including the theory of a spherical earth. Apparently, the expanded worldview brought by the European missionaries freed the Japanese from their earlier Buddhist worldview based on the model of Three Sacred Countries (Kawamura 2003: 16–17).

In fact, even before the Jesuits arrived, the significance of India and China had already gradually shifted. Five years after the first Portuguese landed in Tanegashima, and a year before Francisco de Xavier visited Japan, a codex of the early fourteenth-century encyclopedia *Shūgaishō* 拾芥抄 was re-compiled with a new *Tenjiku zu* 天竺図 added. There are several extant copies of *Shūgaishō* both in hand-drawn and printed versions; the original version does not seem to include this map, but the copies being made after 1548 (except for the Keichō 慶長 edition) have it. On this new *Tenjiku* map, the world island narrows toward the south. It also has place names outside Indian areas, along with the five Indian countries (North, East, South, West, and Central). Goryeo 高麗 of the Korean peninsula is depicted enclosed in a square frame, which is connected to the continent with parallel straight lines. This suggests its shape as a peninsula. The prototype of this map is believed to have been a map of five Indias (*Och'onch'ukkuk to* 五天竺国図) drawn by the Korean government official Yun P'o 尹誧 in 1154 (Unno 1994: 374). Thus, Japan is not seen in this map. Instead, Khitan 契丹—which was a great threat for Goryeo—is vividly depicted next to Korea.

Regarding this map, Oda Takeo points out its characteristics as a 'general world map' rather than a Buddhist map: (1) the travel routes of the Chinese priest Xuanzhuang are missing, and (2) along with 'traditional' place names, many 'new' place names are added from Chinese geographical accounts such as *Faxian chuan* 法顕伝 (a travel account by the Chinese monk Faxian 法顕, fifth century), and *Shan hai jin* 山海経 (a fabled geographical and cultural account of China, third century) (Oda 1974). Considering that the first Portuguese arrived in Tanegashima Island five years before this map was copied, it is highly probable that the interest in geography among Japanese intellectuals had been rapidly growing during this period, and that such an interest had begun to alter the Buddhist worldview. According to Xavier, intellectuals were eager to learn about the new European astronomy, in which the theory of a spherical earth was introduced.

> …The Japanese are most susceptible to reason, more so than any other infidel people I have seen. They are so curious and persistent with their questions, so desirous to learn, that they would never cease to ask and speak with us about those things we said in response to their questions. They did not know that the world was round, neither did they know the path of the sun through the sky; They would ask about these things and others such as comets, thundercracks, rain, and snow, and other similar things, until they would state that they were quite content and satisfied. They regarded as learned men, which helped us greatly in convincing them to believe our words (A letter from Cochin, the 29th January, 1552; English translation from the Portuguese text by Marcelo Aranda).

Although all world maps still embodied the worldview of Buddhist cosmology, India and China had begun to be relativized. Eventually they would be demoted.

The decisive event that would change the worldview of the Japanese was Jesuit missionary Matteo Ricci (1552–1610)'s *Kunyu Wanguo Quantu* 坤輿万国全図 [Map of the Myriad Countries of the World], compiled in 1602 while he was in China. The earliest known Chinese world map in the European style of European maps, based on the notion of a spherical earth, Ricci's map was a sensation in Japan. It is believed to have been brought into the archipelago around 1603, but by 1608 at latest. After the first woodblock reproduction in 1645, Ricci's map was republished repeatedly in Japan as the nation's first Western-style world map. Thereafter, 'modern' maps including copies of Ricci's map were published every ten years throughout the Tokugawa era.

Once Ricci's world map was introduced, the theory of a spherical earth brought by Francisco Xavier was gradually supported by Japanese intellectuals. While Buddhist influence and China's significance as the center of the world still remained to some extent—partly because Ricci himself placed China in the center in his map—the spherical earth theory became definitive among Japanese astronomers in the Tokugawa period. Interestingly, however, a reaffirmation of the Three Sacred Countries by Buddhist monks could not be seen until the late Tokugawa period (Itō 1981: 305–334). Rather, Buddhist monks kept relatively quiet during the early Tokugawa period. This may be because the western worldview had only spread among elites, and thus Buddhist monks did not take it as a serious crisis. Also, this attitude of the Buddhist monks was influenced by the *Ryōbu* Shintō 両部神道 group supporting the theory of a spherical earth (Unno 2004: 62–83). Because of the nature of *Ryōbu* Shintō, or Shintō doctrines derived from Shingon 真言 esoteric Buddhism, the worldview of some Buddhist monks—if not all—was logically influenced by that of the *Ryōbu* Shintō priests.

Uchiwa-gata Nansenbushū zu うちわ型南瞻部洲図 [Map of the Fan-Shaped Jambūdvīpa] (ca. 1709; Fig. 2) can be identified as a clever response to this situation from Buddhist monks. This can be obviously categorized as Buddhist, but there are a few remarkable points here. First, although the Japanese archipelago is not depicted in its entirety and is still positioned at the periphery, the part appearing on the map is quite precise with an accurate alignment of provinces. Second, European countries are depicted as part of the world continent, even though they are represented as a set of islands. Lastly, there are numerous peripheral islands added in the ocean surrounding central land-map. America and Africa are depicted among these peripheral islands. Interestingly, despite the new and specific geographical information from the west that has been added, the image beyond the ocean became more chaotic. Marcia Yonemoto points out that geographical and topographical accuracy became ambiguous in early modern Japan maps (Yonemoto 1999). Yet, comparing Fig. 2 to the earlier Buddhist prototypes discussed above, the depiction

Fig. 2 *Uchiwa-gata Nansenbushū zu*, ca. 1709. Manuscript. 150.8 × 155.5 cm (Courtesy of Kobe City Museum, Kobe)

of a myriad of islands in the ocean became remarkably concrete. Here, I would like to focus more on the peculiar representation of these islands. As the presence of each island became more specific and precise in this map, other countries and areas than China, India, and Japan became clearly recognizable. Who made this map, and what kind of sources did the compiler use?

4 Terrestrial Globes

4.1 The Buddhist Terrestrial Globe by Sōkaku

In fact, the compiler of *Uchiwa-gata Nansenbushū zu* is unknown. Unno Kazutaka, however, speculates that it might be a work of a Buddhist monk named Sōkaku 宗覚 (1639–1720), who produced a terrestrial globe in 1708 based on Buddhist geographical ideas. By investigating the contents and handwriting on the map and the globe, Unno suggests that both are extremely similar. According to *Kaiso Shōjiki wajō gyōgōki* 開祖正直和尚行業記 (1769), Sōkaku was born in Kyoto, and exhibited a multi-talented personality with activities in such diverse spheres as music, Chinese classics, medicine, and martial arts (Unno 2004: 488). He became a Buddhist monk in Kyoto when he was 24 years old, and eventually served as the director of a Shingon temple called Kushūon'in 久修園院 in southern Osaka. Regarding the background of Sōkaku's creation of the globe, Unno suggests that it is highly probable he was influenced by the *Ryōbu* Shintō group and their support of the spherical earth theory. Because Sōkaku was of the same generation as Minamoto Yoshiyasu 源慶安 (1648–1729), a *Ryōbu* Shintō priest who advocated the spherical earth theory, and he frequently visited Kyoto, the group's hub (Unno 2004: 488). Either way, Sōkaku evidently created a globe—the only globe representing the Buddhist worldview among all fifty-one existing globes made during the Tokugawa period. Also, he might have made *Uchiwa-gata Nansenbushū zu*. Even if he was not its compiler, it is clear that this peculiar Buddhist map was strongly influenced by Sōkaku's globe. This indicates that Buddhist monks could not ignore this new worldview, although they had not yet argued against it actively as of the early eighteenth century.

4.2 Prince Shōtoku's Globe

Interestingly, there exists another terrestrial globe that was involved in the complex relationship between Buddhist monks and new geographical knowledge about the world. It is the one so called 'Prince Shōtoku's globe' (Fig. 3) at Ikarugadera Temple 斑鳩寺 in Harima Province 播磨国. This name is after the temple's founder and an ancient Crown Prince Shōtoku 聖徳太子 (574–622), who is

Fig. 3 Shōtoku's terrestrial globe, late-Edo period

universally known among modern Japanese as a powerful regent and an avid patron of Buddhism in the ancient period. The cult of Prince Shōtoku in the ancient and medieval periods was developed through the geographical logic of a satellite (Japan) struggling to break free from a superpower (China). Over time, the prince's images accreted numerous sacred and powerful layers as a national symbol in response to the political, religious, and cultural opportunities of each new age. After the encounter with Europe and the shift in the socio-political structure of the country, the burden of Shōtoku's image as a national symbol also changed accordingly.

Throughout the Tokugawa period, Ikarugadera Temple was famous as a hub of the 'Shōtoku' cult in its community. Although it had been a branch temple of Hōryūji 法隆寺 for quite a long time, it officially declared itself an independent Tendai 天台 temple after a fire in 1541. Tendai ideology in the Tokugawa period functioned to support the Tokugawa Shogunate by appropriating *Sannō* Shintō 山王神道. In fact, *Ryōbu* Shintō and *Sannō* Shintō were both Shintō theories made by Buddhist monks, and both criticized the *honji suijaku* 本地垂迹 theory (i.e., the idea that the Buddhist deities provisionally appeared as Shintō *kami* in order to spiritually save sentient beings in Japan). In other words, both aimed to glorify Japan as a "Shintō state that accepted Buddhism," while the *honji suijaku* theory claimed that Buddhism chose to come to Shintō Japan. In this sense, it is not too surprising that the Tendai-affiliated Ikarugadera ended up accepting the globe, if they shared the same view on their land Japan as the *Ryōbu* Shintō group. Besides, Shōtoku's image by then was already shaped to authorize the first Tokugawa Shogun, Ieyasu 徳川家康 (r. 1603–1605), as a Shintō deity (Sakakibara 2014: 174–193). It is certain that the concept of Japan's place in the world was changing for this representative temple of the Shōtoku cult.

Now let us take a more detailed look at the globe. In the catalogue of treasures possessed by Ikarugadera called *Jōjūmotsuchō* 常什物帳 (1856), the globe is listed as *chichūishi* 地中石 [earth stone]. Due to the history of other treasures and the temple's own origins, this globe ended up being attributed to Shōtoku himself. We can see '*chi-ri-ishi* 地理石 [geographical stone]' in the list of Ikarugadera's treasures that were exhibited to commemorate the one thousand two hundredth anniversary of Shōtoku's death in 1818. This most likely refers to the same *chi-chū-ishi* in the 1856 catalog. In any case, all the treasures at Ikarugadera had come to be related to Prince Shōtoku, and by 1818, the globe was treated in the same way. Needless to say, the globe could have never been made or owned by Shōtoku, an ancient prince. Yet it did not necessarily seem awkward to relate it to him because of his function as a national symbol. At the same time, by being connected to the globe, the world that Shōtoku's image was responsible to embody also changed.

In fact, the Ikarugadera globe is known as the only existing globe made based on Mateo Ricci's world map (Unno 2004: 437). This softball-size globe is made of plaster, with an uneven surface depicting the elevation differences between the continents and the ocean. (Japanese TV show *Tokumei Research 200X-II* 特命リサーチ 200X-II, broadcasted on March 9, 2003, requested Kobe Steel, a Japanese steel manufacture, to determine the material of the globe). It is categorized as a Mateo Ricci-type depiction because of its inclusion of 'Cannibal's country', which is seen only on Ricci-style maps. Among all the Ricci-style maps made in Japan, the map by a medical doctor Terajima Ryōan 寺島良安 (1654–?) in his encyclopedia *Wakan sansai zue* 和漢三才図会 [Pictorial Encyclopedia of Heaven, Earth and Mankind in China and Japan] (1715) was the only one that depicted similar wrinkles on the surface of the earth (Unno 2004: 437). In the section 'Earth' of *Wakan sansai zue*, Ryōan explained, "There are surface variations on the earth. The dents connote rivers and oceans, and the bumps represent mountains. The flat parts are plains with farms and paddies. It looks like a walnut shell." This description is almost identical to the one in Chinese astronomer You Yi's 游藝 *Tianjing huowen* 天経或問 [Queries on the Classics of Heaven] (1672), except for the sentence "It looks like a walnut shell" (Unno 2004: 439). This note must have added by Ryōan, and Unno Kazutaka speculates that the Ikarugadera globe may also have been made by Ryōan sometime in the early eighteenth century, based on this expression (Unno 2004: 439–440). Indeed, the Ikarugadera globe does look like a walnut shell, which is rare for a terrestrial globe made during this period. In addition to the alignment between the comments and the globe's shape, Unno points to Ryōan's connection to the area in which Ikarugadera was located. In 1727, Ryōan made large maps of China and Japan and donated them to Enkyōji Temple 円教寺 in Tatsuno, Hyogo

Prefecture, which is physically close to Ikarugadera. Ryōan also was known for his understanding of Japan and China as 'part of the world', a worldview that indicates the relativization of China among Japanese intellectuals (Unno 2004: 439–440). Of course, Buddhist monks might not have reached such a stage. Yet it is an undeniable fact that Ikarugadera Temple accepted the globe and eventually identified it as a Shōtoku-related treasure. Here I would have to note that the recognition of the new worldview was done at Ikarugadera. This temple founded by Prince Shōtoku was one of the earliest temples that absorbed the new worldview, even while most Buddhist temples and monks kept silent. Such a progressive attitude might be because Shōtoku's significance as a national symbol and embodiment of the world remained undiminished, even as the image of the world began to change after the encounter with Europe. Yet Shōtoku had originally gained his status as Japan's national symbol by being the father of Japanese Buddhism—a religion that was predicated on the absolute superiority of China and India, while Asia meant the whole world. How, then, did the conception of 'Asia' change for Japanese intellectuals, including Buddhist monks?

5 Independent Japan in the World

By examining another one of the most influential references to the Ikarugadera globe, it is possible to find the answer to this question. Along with the Ricci map, Nishikawa Joken 西川如見 (1648–1724)'s gazetteer *Zōho kai tsūshō kō* 増補華夷通商考 [Enlarged Study of the Trading of China and Foreign Countries] was used to fill the gap of information (Unno 2004: 439–440). This gazetteer was originally published in 1695. Then in 1708, Joken published an 'enlarged study' version with a world map called 'Chikyū bankoku ichiran no zu' 地球万国一覧之図 [Map of the Myriad Countries on the Earth]. In fact, *Uchiwa-gata Nansenbushū zu* and Sōkaku's terrestrial globe were also known to refer to Joken's map and gazetteer (Unno 2004: 437, 489). This means that Joken's worldview made a significant impact on the Buddhist worldview.

Nishikawa Joken was a mid-Tokugawa astronomer and geographer born in Nagasaki. He studied astronomy and calendar-making under a scholar of western studies named Hayashi Kichiemon 林吉右衛門 (?–1646), and in 1719 he presented works on these subjects to the eighth shogun Tokugawa Yoshimune 徳川吉宗 (r. 1712–1745). The two volumes of the original *Kai tsūshō kō* 華夷通商考 (1659) made up his practical geography of the world; Part One covered China, while Part Two covered everything else. A revised and expanded edition (*Zōho kai tsūshō kō*), published nine years after the original, covered the geography of China in Part One and Part Two, giving simple maps of the fifteen Qing 清 provinces, while Part Three gave descriptions of Korea, the Ryukyus, Taiwan, Indochina, and the East Indias, including 'Chikyū bankoku ichiran no zu'. Part Four covered South Asia together with Western Europe, and Part Five—'Gai-i zōfuroku' 外夷増付録

[Additional accounts about foreign cultures]—deals with other countries, including Africa, America, and Oceania.

As an astronomer, Joken investigated the astronomy and geography introduced by the Jesuit missionaries, incorporating the new information into his worldview. Although his representation is not necessarily precise (as Joken himself noted in the text), the overall understanding of global space in his map is fairly close to what we see today. Yet in two aspects this map is noteworthy in relation to the Buddhist worldview. First, it highlights the size of India, calling 'Five Indias' which exclusively meant a Buddhist sphere in his additional note. Second, China is called the 'Land of Tang', the name symbolizing China as a central Buddhist realm (Sen 2003). In short, the center of the world was still firmly understood in the Buddhist context, with other countries and areas—including Japan, Europe, and the Americas —considered as peripheries. This depiction may have helped Buddhist monks understand—and partially accept—the new worldview. The physical position of Japan, however, is noteworthy. At least in this map, Japan is located not in the periphery but in the middle of the map. From a Buddhist perspective, such positioning is revolutionary. Joken's effort to relativize China and free Japan from its absolute superiority was also clear in his 1712 essay *Tenmon giron* 天文義論 [Discussions of Astronomy]. There he wrote, "It does not make sense to understand the globe by putting this huge space only under China" (*Tenmon giron*). Moreover, he suggested: "Those who are willing to study astronomy should not follow either Chinese knowledge or European knowledge blindly without criticism. Instead, they should utilize them after scrutinizing what they see. … When doing research on Japan, one must learn the geography of Japan first" (*Tenmon giron*).

Joken's interest in Japan's independence and superiority was already seen in the original edition of *Kai tsūshō kō* of 1695. In general, when we think of Japanese superiority, *shinkoku shisō* 神国思想 [the theory of Shintō Japan as a sacred land] would be the first theory that comes to mind. Fitting this picture, Joken used *shinkoku shisō* in order to explain the geography of Japan and its uniqueness by situating Japan in the world. In *Kai tsūshō kō*, Joken divided the world into three categories: Shintō Japan, China and its surrounding regions, and outer barbarians. Interestingly, he included India in the third category of 'outer barbarians' (*gaii* 外夷). This demotion of India meant the collapse of the Three Sacred Countries model; by extension, it also diminished China (Ōchi 1996: 182–183).

Joken's re-examination of Three Sacred Countries through the new worldview of Western astronomy evolved into a more explicit assertion of Japan as a special Shintō state in his later *Nihon suido kō* 日本水土考 [Study of Water and Land in Japan] (1720). Here, Joken used the new worldview brought by Europeans to authorize Japan as a unique divine state, which could be superior to China (Yagi 1993: 207–208). This intention can be seen in the preface to *Nihon suido kō*:

> Maps of various countries in the world were made in foreign countries. In order to learn geography, you should not avoid understanding the water and land in the world by using these [maps]. Those who find their country to be superior land only by the knowledge proceed in their own country, and who judge their country's beauty only by their own theories, are unable to transcend local prejudice. But, when you see the beauty of your

> country through world maps by foreigners, it is not based on the self-righteousness. Only then can you truly realize the superiority of your country (*Nihon suido kō*).

Joken's intention here is more to emphasize Japan's objective superiority than to extoll the new European knowledge. Apparently, it was impossible for Japan to be fully independent from Chinese and Indian influence as long as the worldview was based on Buddhist spatial concepts. In the text, his argument was clarified as follows:

> On the map of the world, there are three great landmasses beyond the huge oceans at the point where the land ends. The first is north of the central equator. Since the range that the longitude in this sphere covers is huge, it is divided into three continents: Asia, Europe, and Libya. The second is located to the west of Libya, stretching both north and south of the equator. It is called America. The third is in the south of the equator and huge. It is called Magellanica. Together these form five major continents. All countries are located somewhere in the five big continents. Numerous islands belong to the continental areas respectively. This configuration is called the world. […] East of Japan is the only endless ocean in the world, where there is no landform. Although America is depicted in the east on the map, it is topographically attached to the western sphere, with viciously biased energy. When we consider the spherical earth theory, we have to affiliate America with the western side. Although there is no rule to determine absolute east and west, we cannot avoid specifying directions when it comes to discussing the heavens and the earth. (*Nihon suido kō*. In this text, the Latin name Libya referred to the region west of the Nile Valley [modern Northwest Africa]. In Ancient Greece, the term had a broader meaning, encompassing all the continent of Africa).

It is interesting to see how Joken succeeded in proving Japan's independent uniqueness by combining existing astronomical theories from China with new geographical knowledge from Europe.

Japanese intellectuals accepted Joken's argument based on the spherical earth theory after the 1695 publication of *Kai tsūshō kō*. This is symbolically represented by the fact that *Kai tsūshō kō* was republished in an extended version with a world map in 1708, and that Joken was invited to give lectures to Tokugawa Yoshimune starting from 1719. During his stay in Edo, he was writing *Shijūni-koku jinbutsu josetu* 四十二國人物序説 [Introduction to the People of Forty-two Countries] (1720) along with *Nihon suido kō*. As its preface mentions, *Shijūni-koku jinbutsu josetu* was published for commoners in Japan to let them know that there were many people with different cultures in the world ('Preface' in *Shijūni-koku jinbutsu josetu*). In other words, Joken intended to claim that Japan had its own culture like any other countries.

6 Shintō Japan in the World

For Joken, Japan's unique culture was based on *shinkoku shisō*, as he discussed in *Nihon suido kō*. Joken explained Japan's superiority as follows:

> This country (i.e., Japan) is located at the eastern top of the world, where the morning sun shines first. It is the first place where good energy emerges, and the original land where the trembling thunder rises up. […] The reason why this is considered to be the *kami*'s country is an unignorable theory of the water and land. According to *Shiji* [Records of the Grand Historian, by Sima Qian, ca. 145 or 135 BC–86 BC], the east is the house of the deity's light. The northeast is the place of the whole yin and yang. Therefore, it is the place where goodness arrives and the evil devil leaves (*Nihon suido kō*).

Apparently, the purpose of Joken's studies was to objectively prove the independence and superiority of Japan in the world. Rather than completely denying the Buddhist theory of the Three Sacred Countries or fully accepting the European worldview, Joken developed his argument based on Shintō theory. Japan's superiority was authorized by having Shintō deities' blessing on the whole country. This idea echoed *Ryōbu* Shintō's anti-*honji suijaku* ideology, which claimed that the three Shintō deities seen in *Nihon shoki* (720) gathered together first, and then they appeared as Vairocana. As mentioned above, *Ryōbu* Shintō priests of this period were earnest supporters of the spherical earth theory, and exerted influence on the terrestrial globe creation of Sōkaku. Thus, Joken's conceptualization of Japan and the world accorded with that of the *Ryōbu* Shintō group.

How, then, did Buddhist monks take this trend? Now I would like to go back to the shifting image of Prince Shōtoku as a both national and Buddhist symbol. As mentioned above, after the appropriation of the Shōtoku cult based on the *honji suijaku* theory, his role as the father of Buddhism was essentially to authorize Ieyasu as a Shintō deity during the Tokugawa period. Effectively, Tendai, the most powerful Buddhist sect in the early Tokugawa period, was advocating a Shintōist view of Japan. Ikarugadera, a representative Tendai temple endorsing the Shōtoku cult, possessed the terrestrial globe attributed to Shōtoku. Thus, it would be possible to say that a state symbolized by Shōtoku was conceptualized as part of a world based on Shintō theory. These facts lead us to presume that Shōtoku's image by the early Tokugawa period had been radically recast to symbolize not Continental Buddhism but Japanese Shintō tightly linked with Japanese-state Buddhism.

Yet, Shōtoku did not necessarily lose his attribute as the father of Japanese Buddhism. Rather, new attributes as a Shintō symbol were added, and amalgamated to his Buddhist role. This exactly reflected the situation of Japanese religious geo-politics. By the mid Tokugawa period, Buddhist temples across Japan were deepening their relationships with local Shintō shrines. Accordingly, the Shōtoku cult also spread throughout Japan, developing in deeply localized ways. In the process, Shōtoku never lost his role as a state symbol—his unchangeable character. But a state symbol is always connected to the world, and must reflect not only domestic trends but also world trends. This is the context in which the terrestrial globe at Ikarugadera ended up being attributed to this ancient prince Shōtoku in later Edo.

Needless to say, Sōkaku's terrestrial globes and *Uchiwa-gata Nansenbushū zu* also reflect Japanese Buddhist monks' struggle. Unno Kazutaka points out that the development of Buddhist world maps by scrutinizing or criticizing the newly introduced geographical knowledge was seen only in Japan (Unno 2006: 239–265).

Indeed, many Buddhist world maps including outside Asia were created and circulated throughout the Tokugawa period. When the concept of the world changed, Buddhist monks were challenged to explain how the newly discovered space beyond Asia existed and how Japan could still maintain its superiority in the new world. In the process by conceptualizing the national landscape empowered by both Buddhism and Shintō, they could consequently relativize Asia, which used to be the whole world symbolized by the superiority of India and China.

7 Conclusion

In his maps and narratives to objectively prove the independence and superiority of Japan in the world, Nishikawa Joken developed his argument based on combining new knowledge from Europe with Japan's traditional cosmology, rather than completely denying the Buddhist theory of the Three Sacred Countries or fully accepting the European worldview. He particularly emphasized the Shintō theory, instead of Buddhism, to legitimize Japan's independence and sacredness, claiming that Japan's superiority was authorized by having Shintō deities' blessing on the whole country. Thus, Joken's conceptualization of Japan and the world accorded with that of the Shintō groups. Eventually, Joken's worldview inspired the Shōtoku narratives and gained broad support among Japanese intellectuals, including Buddhist monks, until the end of the Tokugawa period.

After Japan was forcibly opened to the world in the mid-nineteenth century, the Meiji government forbade the preaching of 'Sumeru theory', a Buddhist cosmology that posited the world as a constellation of four continents centered on the sacred Mount Sumeru. This ban—part of a broad campaign to stamp out Buddhism in Japan—compelled Buddhist monks and scholars to reframe their traditional cosmology as religious myth, rather than doctrinal truth. *Shakkyō yochizu* 釈教輿地圖 [Buddhist World Map] (1880) was made in the midst of such a movement to 'abolish Buddhism and destroy Shakamuni' by a Buddhist publisher named Ōtomo Yoshimasa 大伴義正 and his mentor Sata Kaiseki 佐田介石. The description on this map reads: "[This map] can be understood abstractly as a map of Sumeru and the four continents surrounding the mountain, or concretely as a map of the terrestrial globe. Although a flat map may appear to contradict the spherical theory of the earth, this one attempts to show the curvature of the earth. [As such], it should serve as a useful reference not only for Buddhists but also for Confucian and Shinto scholars. For when it comes to astronomy and geography, both Confucians and Shintoists [wrongly] take the position that the sun and the moon move between a flat heaven and a flat earth." This passage shows an intriguing attempt to forge a compromise between Sumeru theory and spherical-earth theory. It goes so far as to claim that such a compromise would be instructive to Confucians and Shintōists as well (Sakakibara 2016: 105–106). In the sense that the religio-political dispute among Japanese cartographers is obviously reflected, this map is a good example of the worldview of Japan's traditional intellectuals at the very beginning of the modern period, indicating the very end of the Buddhist worldview, the moment when Japanese intellectuals finally overthrew the Chinese order which had been hegemonic in Japan since ancient times. As a modern nation, Japan was aiming to gain not just independence but superiority. For this purpose, the struggle of the Tokugawa intellectuals by localizing Asia—where Japan itself belonged to—was a crucial step.

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Gyōki-Type Shape: Representation of the Japanese Archipelago in East-Asian and Western Maps

Ekaterina Simonova-Gudzenko

Abstract The first known Japanese visual representation of the archipelago is attributed to Gyōki Bosatsu (668–749). Today at least eighteen manuscript Gyōki-type 行基 maps are preserved, in different formats, and they date from the beginning of fourteenth century through the second half of the eighteenth century. The prototype of Gyōki maps can be clearly seen in the first representation of the Japanese islands on the oldest of surviving Korean maps—Kangnido (1402, the earliest extant copy 1472) and on the earliest printed map of Japan (1471, Sin Sukchu). The depiction of Japan as a little oval island with the name Nihon is prevalent in Chinese maps beginning with the earliest extant maps of the Chinese Empire dating from the Song dynasty (960–1279) and till the Ming period (1368–1644). Beginning with the 1459 Fra Mauro map, the earliest European map with the name Japan and a representation of the archipelago seems to draw influence from the East Asian cartography. Maps made by Homem (1554, 1558), Velho (1561), Dourado (1568) and even the first separate map of Japan by Teixeira (1595) were to a great extent based on Gyōki-type maps. From the seventeenth century onwards Japanese cartographers used in their mapping methods geographical data they adopted from European maps and changed their restrained depiction style to a colourful description of nature, celebrated sights etc. (Ryūsen's maps, 1661–1720). Korean cartographers borrowed the Western tradition of making atlases and produced a rather rare, unique tradition in the East Asian cartography—atlases for everyday use.

1 Introduction

The representation of the Japanese archipelago in the mapping of the world is one of the most interesting phenomena. This paper focuses on investigating the representation of the Japanese islands on Gyōki-type maps and its impact on the representation of the islands on Korean, Chinese and Western maps. It is important

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because the Gyōki-type map's image of the Japanese archipelago influenced the representation of the archipelago in the world cartography, both East-Asian and European, till the nineteenth century.

Before establishing direct contact with the Far Eastern empire, Europeans drew the Japanese islands in a very peculiar shape. Washburn called Japan "a shuttlecock of the Pacific" and pointed out the significance of finding its place on the world map for European mapmakers (Washburn 1952: 221–236). Japan first became known to the Europeans through the account of Marco Polo in late thirteenth century. He wrote: "Cipangu is an island towards the east in the high seas, 1500 miles distant from the continent; and a very great island it is. The people are white, civilized and well-favoured. They are idolaters, and are dependent on nobody. And I can tell you the quality of gold they have is endless" (Polo 1875: 235–236). Today practically everybody knows that the location of Japan was the practical faith that carried Christopher Columbus to the discovery of a New World, and that Polo had never been to Japan, but used the information he gained in the Great Khan's court.

Nakamura Hiroshi (中村拓) wrote about the tremendous influence of the 'Travels of Marco Polo' (1254–1324) on the development of geography and geographical discovery in later years. He mentioned that it was believed that Marco Polo could have brought a map from China (Nakamura 1962: 11–12). It seems that today more likely is the conclusion made by Yurchenko, Russian specialist in the Mongol history. In his latest book devoted to Marco Polo's travels he noted: "In his book Marco Polo was retelling the map of the Mongolian empire, listing its towns. At first, the depiction was made in the form of Arabian-Persian cosmographies and for the towns of Southern China he used Chinese travel guides. Enumeration of homogeneous subjects is natural only for an imperial map. Though rather boring for the readers, the book became an important source for medieval mapmakers. Marco Polo exported to Europe a wealth of geographical data accumulated by Yuan officials. For the medieval Occident this resource was excessive, absolutely unnatural for the Christian topography of the world" (Yurchenko 2007: 31–32). Of course Marco Polo could have used Chinese maps, but it seemed much more likely that he used different written sources, especially sources of dynastic histories. Even if he had brought Chinese maps to Europe, they would not have been useful for most mapmakers if only because they were made in a different tradition of spatial ideas and written in Chinese.

Research interest in the early European cartography of Japan dates back to the beginning of the twentieth century. In late 1930s, European and Japanese historians of cartography conducted studies along parallel paths when two significant works appeared. Those were Ramming's 'The Evolution of Cartography in Japan' in *Imago Mundi* (Ramming 1937) and Nakamura Hiroshi's 'Les Cartes du Japon qui servaient de modèle aux cartographes européens au début des relations de l'Occident avec le Japon' (Nakamura 1939). Though the first one is a short overview of Japanese cartography and the second is an in-depth analysis of two sixteenth-century Japanese maps brought to Europe by the first Japanese mission and preserved in Florence and Madrid, both experts noted the influence of Japan's so-called Gyōki-type maps on the representation of Japan on European maps.

Ramming wrote: "the first map of Japan printed in Europe, that drawn by Ludoico Teixera and published by Ortelius in 1595, was likewise based on a Gyogi map" (Ramming 1937: 18). He also emphasised that Gyōki-type maps influenced Korean, Chinese and European maps (Ramming 1937: 18). Nakamura Hiroshi first listed opportunities for Westerners to see Japanese maps in Buddhist temples, ancient books etc., and pointed out that they could use those maps while making their own charts (Nakamura 1939: 108–109). Since that time a lot of research was made, but most publications are devoted to the types of maps or mapmakers.

It seemed that today the best works systematizing information on the representation of the Japanese archipelago on European maps are studies by Walter (1994) and Unno 海野一隆 (1999). Walter stressed that "the first demonstration that the first influence and interdependence among the European views of Japan can already be found in Teleki's pioneering work of 1909. Dahlgren followed this up by classifying the maps into specific types. Half a century later Cortesão took up the theme again in the context of Portuguese cartography. His reflections were pursued further by Tadashi Takahashi and Kazutaka Unno, among others" (Walter 1994: 40).

The first representation of the Japanese islands that was close to actual reality appeared on the separate map of the archipelago in the atlas of Abraham Ortelius in 1595. This map is known as the Ortelius-Teixeira map, for the names of the authors of the atlas and the map. This first separate map of Japan was based on the representation of the Japanese archipelago on Gyōki-type maps.

The reason that the archipelago was so peculiarly depicted on East Asian maps is the Chinese concept of the Middle Kingdom, with China superior to other peoples and nations under the heaven and occupying a central position in the Universe. In line with this concept, until the sixteenth century all the countries located on the borders of the Empire were considered barbarians and did not deserve any attention. On Korean maps a more realistic representation of the Japanese Islands appeared in early fifteenth century when Korean embassies to Japan become more regular.

Lucia Dolce emphasizes that Gyōki-type maps were "one (type) of the medieval maps that is relevant to elucidate the self perception of the country and at the same time illustrate the understanding of the contemporary position of Japan in East Asian region" (Dolce 2007: 283).

2 Gyōki Bosatsu's Maps of the Japanese Archipelago

The first known Japanese visual representation of the archipelago is attributed to Gyōki Bosatsu (668–749), a Korean monk who spread Buddhism around the country, constructed roads, bridges and canals and said to be the founder of mapmaking in Japan.

The first written record of monk Gyōki as a founder of mapmaking in Japan dates back to the fourteenth century (天台宗 Tendai source 渓嵐拾葉集 Keiran shūyōshū), as well as the earliest extant Gyōki-type maps—*Shōmyō-ji nihon zu* (称名寺日本図 1305) and 仁和寺日本図 *Ninna-ji nihon zu* (1305–1306).

The specifics of the maps' data (such as the centre marked as Heian, the country's capital since 789) show that the first maps of the Japanese archipelago appear to have been drawn no earlier than the thirteenth-fourteenth centuries.

Unno Kazutaka, a renowned expert in the history of Japanese cartography, wrote: "Whether Gyōki himself actually composed any maps is not known, but the reliable biography, the '*Gyōki nenpu*' (行基年譜 Chronological history of Gyōki) of 1175, by Izumi no Takachichi (泉高父), does not mention mapmaking among his varied activities" (Unno 1985: 367). Lucia Dolce noted: "the first writings that associate the monk to national maps are medieval works. The Gyōki *daibosatsu gyōjōki* (行基大菩薩行状記), a fourteenth-century hagiography of the monk, maintains that Gyōki drew maps of the three countries (三国 *sankoku*). The *Keiran shūyōshū* repeatedly refers to a *Gyōki bosatsu ki* (行基菩薩記) as evidence of the vajra-shape of Japan, but no manuscript of this title has ever been discovered and the only reference to it is in *Keiran shūyōshū*. It is likely that, in order to be cited in this collection, the *Gyōki bosatsu ki* was compiled a few decades earlier, probably between the twelfth and the thirteenth centuries" (Dolce 2007: 282; Unno 1985: 367; Kinda and Uesugi 2012: 53–58).

On Gyōki-type maps, the archipelago was placed not only in the center of the world, but also in the shape resembling a vajra (Unno 1994: 366–371; Dolce 2007: 270–294; Ooji 1996; Simonova-Gudzenko 2014: 213–232), a ritual object of tantric Buddhism, as an indication of the sanctity of the country. The topographic information on Gyōki-type maps is worthy of note as being almost exclusively administrative or even, in fact, political: the maps indicate the capital, provinces, roads, but not terrain objects (rivers, mountains etc.). Perhaps it was the desire to strengthen the sacred power of the state, using the power of provincial deities, or it was a kind of reaction to the entry into the big world, the desire to demonstrate that Japan is a country no less cultured than her neighbours, China and Korea. On the Buddhist world maps of the same period (仏教世界図 *Bukkyō Sekai zu*), artists modestly drew the Japanese archipelago at the edge of the borders of the Buddhist (Jambudvipa) continent.

So it seems that it can be said that in that period two spatial concepts were formulated, the Buddhist one and the insular one. In the seventeenth to nineteenth centuries, these two concepts were united-on the Buddhist world maps of that time, though Japan was still depicted on the edge of the Buddhist continent, it became much bigger in size and its shape is like that on Gyōki-type maps. Characteristic features of Gyōki-type maps include:

- the shape of archipelago resembling a vajra;
- the archipelago stretching from west to east;
- the territory divided into 66 provinces of round or oval form, closely attached one to another;
- in every oval there is the name of the province and the number of districts.

On some maps (*Dai Nihon Kokuzu* 大日本国図 Map of Great Japan from sixteenth century copy of *Shūgaishō* 拾芥抄 Collection of oddments, fourteenth century) the seven great roads of the country are radiating from the center, Yamashiro 山城国 province (where Kyoto 京都 is situated). It looks like that this phenomenon can be regarded as an illustration of the development of the ideological concept of ‘shinkoku’ (神国 Land of gods) (Kuroda 1996: 353–385; Rambelli 1996: 387–426).

Today at least eighteen manuscripts of Gyōki-type maps exist, dating from the beginning of the fourteenth century through the second half of the eighteenth century, and they exist in different formats—such as a single sheet map, hand scrolls, book illustrations, folding screens and a fan owned by Toyotomi Hideyoshi (豊臣 秀吉 (1536–1598)). The Gyōki map was reproduced for centuries in commercial maps and used as decorative element in Japanese fine art in the early nineteenth century in *netsuke* 根付, *inro* 印籠, *imari-ware* 伊万里焼 plate etc.

Gyōki-type maps had two periods of popularity, the first in the thirteenth-fifteenth centuries, the second in the seventeenth-nineteenth centuries. Both periods correspond to the time of the Japanese discovering the big world, for the first time—after the Mongols’ unsuccessful invasion attempts and the second—after the Europeans’ arrival in the archipelago. It is important to stress that European cartography had a considerable impact on the maps of the second period. The earliest extant Gyōki-type maps are Shōmyōji nihon zu and Ninnaji zu. Both maps have survived only partially: from the Shōmyōji map only the western part and from the Ninnaji map only the eastern part. The Shōmyōji map represents the isles of Honshu, Shikoku, and Kyushu, as well as both real and imaginary foreign countries, making it a world map. The Ninnaji map represents exclusively Japan, specifically the northeastern part of Honshu island. That may reflect the fourteenth century Japanese ignorance of lands and countries northeast of Honshu, though the lost western part could also include foreign countries (Figs. 1 and 2).

Speaking of the reasons for the maps’ partial survival, Unno Kazutaka noted: “The surviving part of the map is in sumi (India ink) on a single piece of paper measuring 34 × 52 cm. The thick, good-quality paper is of the type used by copyists for Buddhist sutras and other ancient texts. Straight lines drawn in pale ink parallel to the upper and lower edges of the paper to serve as margins indicate the sheet was intended as part of a book. In those days, many books were produced as scrolls. Faint fold lines on the map show where it was flattened through pressure from above during storage and confirm that this map was indeed once rolled up as a scroll. Originally, two sheets of paper had been glued together to make the map but, once the glue had lost its adhesive power, these came unstuck and the left hand sheet was lost” (Unno 1994/1: 73).

Though such an explanation seems convincing, I would like to mention that on the *Dainihon kokuzu* (大日本国図 Map of Great Japan) from the codex of Shūgaishō which is often cited as a reference Gyōki-type map, two sheets, for western and eastern Japan, were stitched separately. However, if you order in the library a copy of this map, you will be given a whole map of Japan where the seam is barely visible. The gluing of maps created on multiple sheets is a phenomenon often encountered in world mapping, due to the difference in dimensions of paper sheets made in different countries.

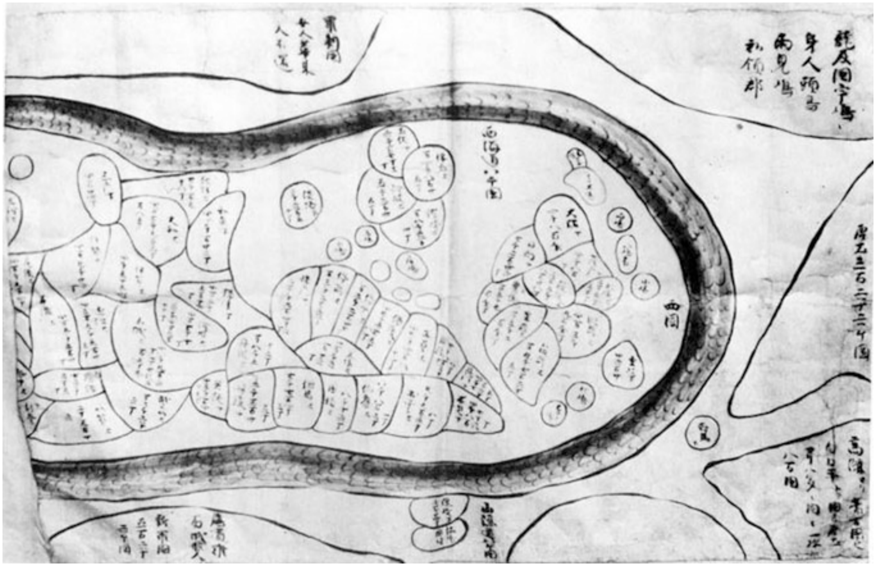

Fig. 1 Map of Japan *Shōmyōji zu* (Courtesy of Kanazawa bunko museum)

Fig. 2 Map of Japan *Ninnaji zu* (Courtesy of Ninna temple, Kyoto)

It seemed that early Gyōki-type maps were usually drawn on two sheets—for the western and eastern parts of the Japanese archipelago. The extant part of another ancient map—the Ninnaji map, ‘sister map’, as Japanese historians call it, represents Eastern Japan with Mutsu province. The *Dainihon kokuzu* map, which remains in the 1548 Codex of Shūgaishō, represents the two parts called ‘West and East’. This kind of division of the archipelago’s space into western and eastern parts seems to have more than only topographic/geographic basis (Amino 1998) (Fig. 3).

Both early maps probably had a sacred significance, as both were used during Shinto ceremonies. On the Ninnanji map there is an inscription indicating that the map could be used in the annual ritual in the Imperial Palace, held on the last day of the year to drive evil spirits beyond the country’s boundaries (*Tsuina*)

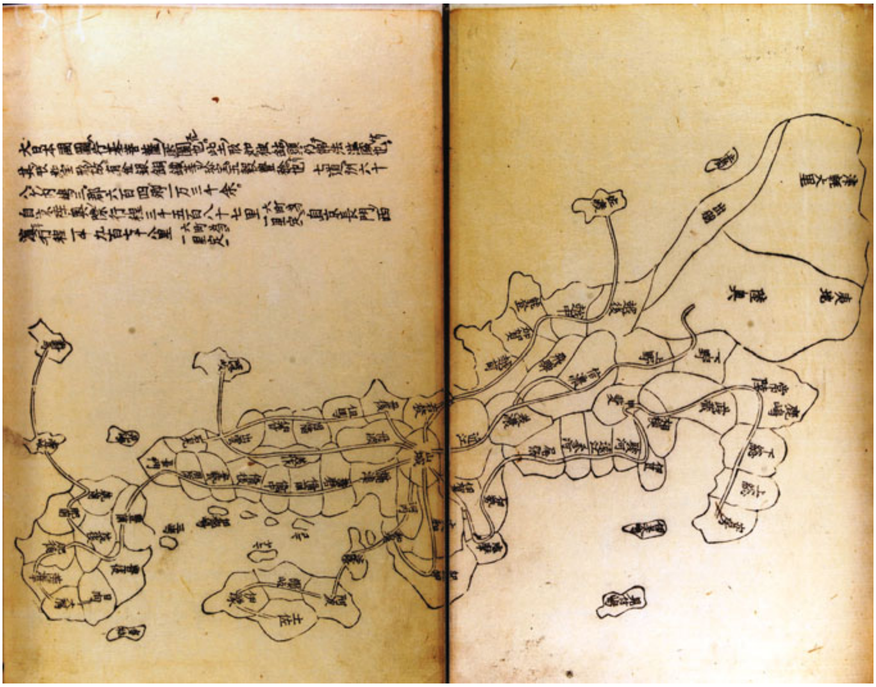

Fig. 3 *Dainihon kokuzu* in Shūgaishō (Courtesy of Waseda University Library)

(Unno 1994: 368). According to Unno Kazutaka, the Shōmyōji map was also probably used in ritual practice. He noted that the relationship of Buddhism and Shintoism in the temple of Shōmyō was extremely close since the first abbot Shinkai (1229–1304) (Unno 1994/1: 73). He even "strongly suggests that such maps [Gyōki-type] had religious associations and praised the country" (Unno 1994: 368). From the point of orientation to the cardinal Gyōki-type maps are targeted differently, with the Shōmyōji, Ninnaji and Toshodaiji (南贍部州大日本国正統図 Orthodox map of Great Japan in Jambudvipa ca. 1550) maps having a southern orientation and the Shūgaishō map a northern one.

Shōmyōji zu is a manuscript map. It has no title. Unno suggested that the extant map was a copy made by Kenna (1261–1338), the second chief priest of Shōmyō temple, who borrowed a *chirizu* (地理図 geographical drawing) from Nagai Sadahide, scholar and chief retainer of the Kamakura shogunate. At that time the more frequent word for map was *ezu* (絵図 pictorial drawing), and the term *chirizu* is thought to have denoted a map of a fairly large territory (Unno 1994/1: 73). On this map, neighbouring foreign countries are placed close to the margins, with real and imaginary elements mixed in their depictions. The map is oriented to the south. Hugh Cortazzi pointed out a "noteworthy feature of this and other early maps produced in Japan is that south is at the top of the map, and as a consequence China and Korea appear on the right. The two Northern provinces of Honshu, Mutsu, and Dewa, point outward, whereas in other Gyōki-type maps they are usually shown in rounded form" (Cortazzi 1983: 5).

The particular feature of the map is a dragon/snake encircling the country. In response to an unfamiliar hostile world, more specifically to Mongol invasions, Japanese map-makers drew a snake/dragon image on the Shōmyōji map, which represented a defensive border between the Japanese Islands and their surroundings. The image of the reptile's head did not survive, and that provoked discussion among Japanese experts in the history of cartography, with arguments brought forth in favor of both animals (Unno 1999: 23–24; Kuroda 2003: 110–111). However, it is not so important for our particular study which of the two reptiles is drawn on the map, as both the dragon and the snake play an important role in mythology (Ivanov 1980: 394, 468–471; De Visser 1913). Kami, Japanese deities which appeared before the creation of man often took a snake's shape. The dragon is a symbol of wisdom, strength, hidden knowledge and Imperial power in Chinese and Japanese mythology, as well as a key character in rain-summoning rituals. Thus, the reptile surrounding the country, whatever it might be, defended it from 'alien, hostile' evil forces, and symbolized that Japan is a divine country (Kuroda 2003).

Giving the importance of *Shika no shima*, the island field of battle with Mongol invaders, historians argue that the map may have been used for religious rituals. The body of the snake/dragon separates Japan from the hostile, unknown, foreign lands including Mongolia. The association of Buddhist practice at the Shōmyō temple and the map supports this interpretation.

3 Representation of the Japanese Archipelago on Korean Maps

The first representation of the Japanese islands on Korean maps is found on the oldest of surviving Korean maps—*Kangnido* (混一疆理歴代國都之圖 *Honil Gangni Yeokdae Gukdo Ji Do*, Map of Integrated Lands and Regions of Historical Countries and Capitals 1402), with the earliest extant copy dating to 1472. The map was drawn by Korean cartographers Yi Hoe and Kwon Kun. Four copies of the map remain, all of them now preserved in Japan. The shape of the Japanese islands looks close to that on Gyōki-type maps. The outline is comparable to the Japanese maps of the time and the territorial division marked on the Korean map seemed to have been borrowed from Gyōki-type maps.

Historians of cartography believe that this map is based on Chinese world maps. At that time, Korean official Kim Sa-Hyong (金士衡) brought from Ming China to Korea two maps, *Seongkyo kwangpido* (声教広被図) and *Honil-Kangnido* (混一疆理図). But these maps did not show the area east of the Liao river (遼河), so Lee Hoe (李薈) added to it the map of the Korean peninsula which he made himself, and the map of Japan which Park Ton-Chi (林敦之) brought from Japan in the late fourteenth century. Kenneth Robinson wrote: "Its prototype, the 1402 Kangnido, had itself been derived from maps in several cartographical traditions.

A variety of languages thus underlies the Ryukoku Kangnido place-names. For instance, for the representation of the Middle East, continental Europe and Africa, the Korean officials used one or two Chinese maps that are believed to have reproduced place-names and other data from Islamic cartography. The toponyms written in Arabic on the Islamic maps would have been rendered in Chinese characters on one or both of these maps, which are thought to have reached Korea on the return of a Korean embassy that had visited China between 1392, when the Choson government was established, and 1402" (Robinson 2009: 179). The Kangnido map (1402), as well as the Ming map of the world, have traditionally been seen by historians of cartography as the oldest world maps to have been created by East-Asian cartographers. Specialists in the history of cartography believe that these maps were created after the Mongol invasions, and reflect new geographical data, mainly about European countries and the African continent, which became available to the Chinese from Arab sources. The Korean map is less detailed and accurate in the portrayal of geographic information, although Japan is shown in incomparable detail and accuracy. It depicts the general form of the Old World, from Africa and Europe in the west to Japan in the east. Although, overall, it is less geographically accurate than its Chinese cousin, most obviously so in its depiction of rivers and small islands, it does feature some improvements (particularly the depictions of Korea and Japan, and a less cramped version of Africa).

Japan is oriented with west at the top, as if turned upside down. However, its outline is comparable to Japanese maps of the time, and the territorial division marked on this map seems to have been borrowed from Gyōki-type maps. As J. Short argues, that 1402 Kangnido map contains a representation of Japan that draws on a Gyōki-type map of Japan obtained by the Korean diplomat Pak Tonji who visited Japan between 1398 and 1402. The direct use of a Gyōki-type map highlights the cartographic relations between the two countries (Short 2013: 60) (Fig. 4).

The influence of the same Gyōki-type map is clearly visible in the earliest printed map of Japan in 1471 was also made by a Korean, Sin Sukchu, secretary of the Korean embassy in Japan in 1443. The influence of the same Gyōki-type map is clearly visible. The book Sin Sukchu wrote about his journey, Chronicle of the Countries of the Eastern Sea (*Haedong Cheguk Chongdo from Haedong Cheguk Ki* 海東諸国紀), included a set of maps, of Japan and the Ryūkyū archipelago (Japan as a whole, separately—eastern and western parts of the country, as well as the islands of Kyūshū, Tsushima, Ryūkyū, and Iki with adjacent small islands).

The general map of the archipelago as well as maps of the country's eastern and western parts were based on a Gyōki-type map. The archipelago on those maps is oriented to the north. However, the representation of Ryukyu clearly shows the influence of Chinese cartography. Ryūkyū is represented by one big island surrounded by many small isles, with the shape of this big island looking like a horseshoe with the obligatory picture of a wall of the Royal Palace. Such representation of the Ryūkyū archipelago was typical for Chinese maps of the seventeenth to nineteenth centuries. Thus, on the Kangnido map Korean cartographers constructed the image from models borrowed in the neighbouring countries (Fig. 5).

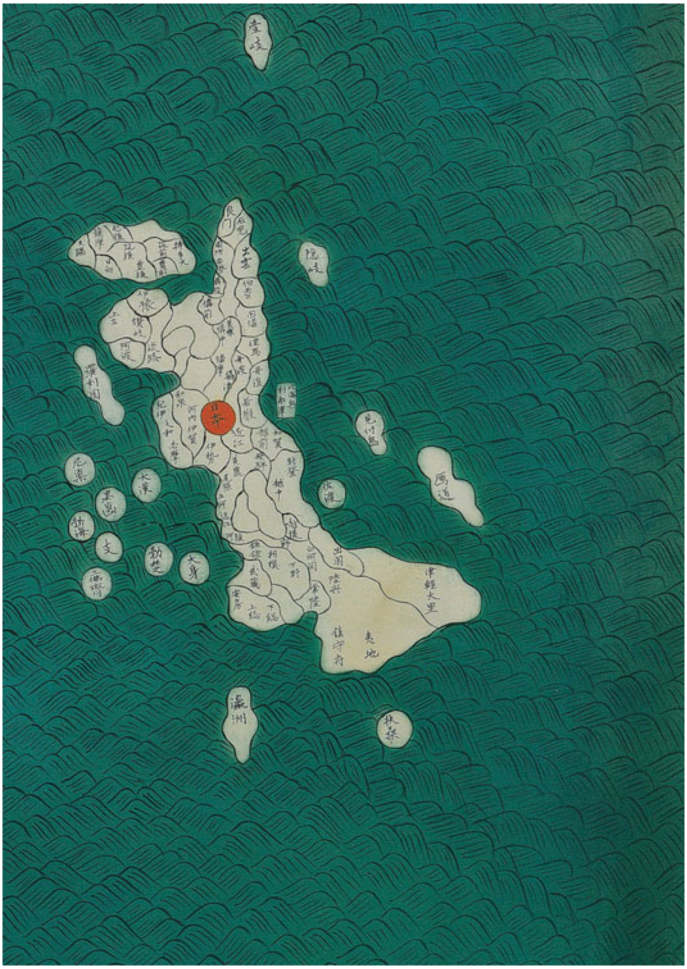

Fig. 4 Japan. Detail from Ryukoku Kangnido map (Courtesy of Ryukoku University Library, Kyoto)

4 Japan Mapped by Chinese Cartographers

In traditional Chinese cartography, until the fourteenth century Japan was depicted as a small oval island to the east of China and the barbarian countries (by Shui Anli 歷代地理 指掌圖 古今華夷區域總要圖 稅安禮稅安禮, 1100; Map of China by Zhipan 佛祖統記 東震旦地理圖 志磐 1271 and others), and was called Jiben (日本). On the *Da Ming Hun Yi Tu* map (大明混一圖 Great Ming Dynasty Amalagamated Map 1398), which, like the Korean map, Kangnido (1402), historians of cartography believe to be one of the earliest world maps created by East Asian cartographers, Japan was still depicted as a small island. It is only on the map

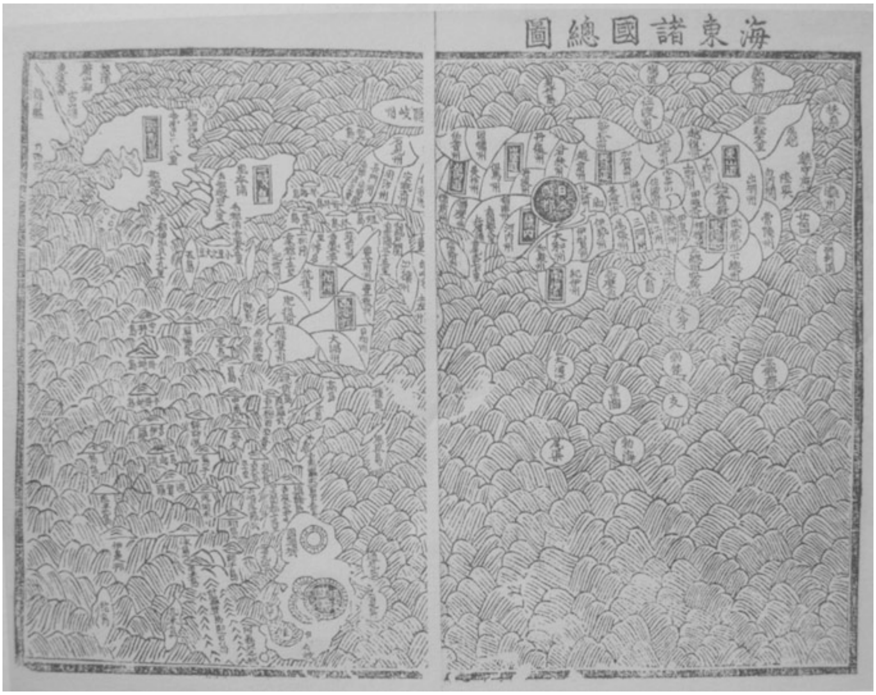

Fig. 5 Map of Japan in Sin Sukchu' Chronicle of the Countries of the Eastern Sea (Courtesy National Diet Library, Tokyo)

of Japan in *Ribenguo Kaolue* (日本国考略, Concise Treatise on Japan) by Xue Jun (薛俊, 1530) that Japan was represented in its entirety in a Gyōki-type shape. "The Tohoku District in the Gyōki maps was usually drawn comparatively small in size and with little swerve to the north. In some of the Gyōki maps, copied by the Chinese, such as the 'Map of Japan' in *Ribenguo Kaolue*, the Tohoku District is drawn bending to the south" (Nakamura 1962: 54). In the book, the map is divided into two parts, eastern and western Japan, printed *en verso* accompanied by text (Fig. 6).

Thus, it seemed that in Chinese cartography until 1530 the image of the Japanese archipelago as a small oval island, symbolizing its inclusion in the barbaric periphery and insignificance of the island people for the Middle Kingdom, was dominant. But in the fifteenth and sixteenth centuries, Japanese pirates brought the Chinese Empire great inconvenience and forced it to pay attention to the insular country. As a result, China studied all available information on the small Far Eastern country, with detailed descriptions, changing its perceptions and representations on maps.

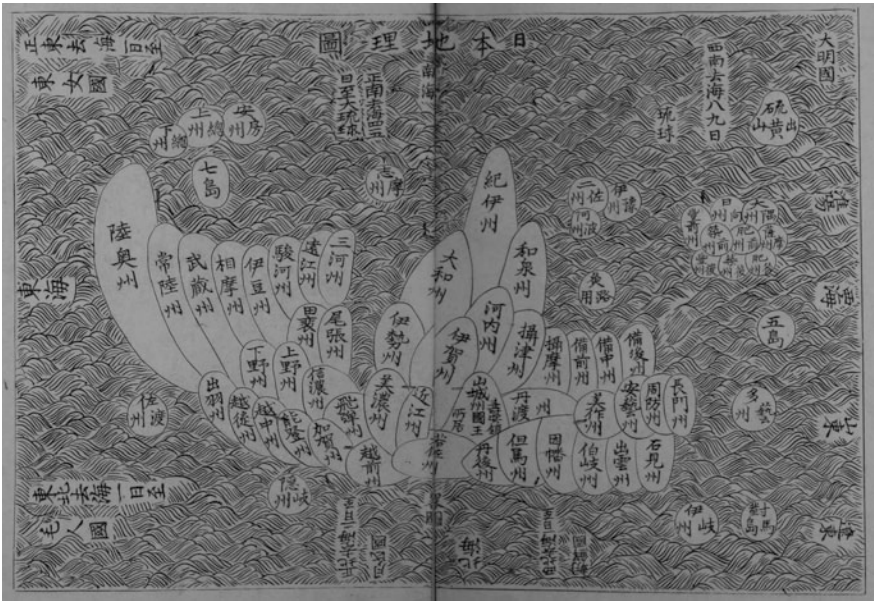

Fig. 6 Map of Japan in *Ribenguo Kaolue* (Courtesy of Waseda University Library, Tokyo)

5 Japan in Western Cartography

The period of early representation of Japan starts with the first information about Japan in Europe brought by Marco Polo (1254–1324) and lasted until the beginning of seventeenth century, when the new page in the representation of Japan was opened by the Portuguese, who maintained the closest connections with the island kingdom in the early period of European acquaintance. The period coincides with the investigation of the Pacific. As it is written in the catalogue of the 2003 exhibition of the old Japanese maps in the Tokyo National Museum, European maps of Japan were drawn, based on scanty information ornamented by rich imagination, and often look strange to our eyes (Catalogue 2003). Maybe it was because "Western cartographical science had variously placed her [Japan] according to rumor, hope or knowledge" (Washburn 1952).

The first known representation of Japan in Western cartography is found on the round map of Fra Mauro (1459). The island called Zipangu is situated near the coast of China, with something like a big castle with towers or a mosque drawn on it (Nakamura 1962; Simonova-Gudzenko 2015; Washburn 1952). Japan was drawn as a single island, and the name clearly originates from Chinese. The Fra Mauro map is one of the first Western maps to represent the islands of Japan (possibly after the De Virga world map).

On the 'Erdapfel', the globe by Martin Behaim of 1492, Japan is drawn as a single island, located about 25° from the coast of China on the Tropic of Cancer,

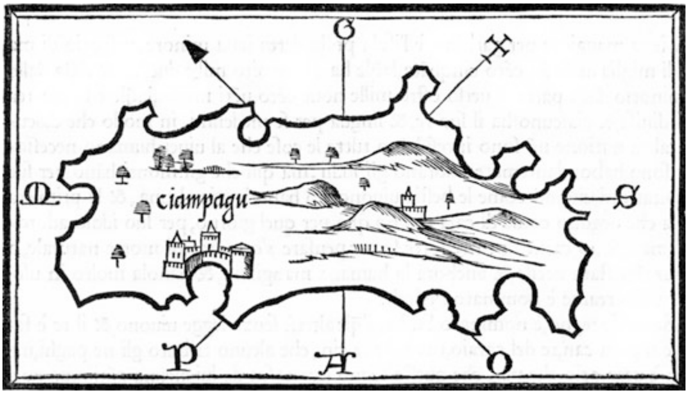

Fig. 7 Benedetto Bordone Ciampagu map

as described by Marco Polo, and called the Island of Cipangu. It is a large oval island, oriented strictly from north to south, with a European-style castle in the center and a chain of mountains on the west coast. The inscription on the map reads: “This island of Zipangu is situated in the East. Its people are fond of idols. The king is accountable to no one. The island has a lot of gold, precious stones and pearls. So wrote the Venetian Marco Polo in his third book” (De Castro 2013: 62–63) (Fig. 7).

The earliest known printed map of Japan published in Bardone’s book Isolario. Benedetto Bordone (1460–1531) was a manuscript editor, miniaturist and cartographer, born in Padua, then part of the Republic of Venice. His most famous work is the Isolario (The Book of Islands) where he describes all the islands of the known world with their folklore, myths, cultures, climates, situations, and history. Printed in Venice in 1528, the work is an example of a cartographic genre popular in Italy during the fifteenth and sixteenth centuries. It is intended as an illustrated guide for sailors and attempts to include all the new transatlantic discoveries. Also of interest is a map of Ciampagu—the earliest known European-printed map of Japan as an island.

The representation of Japan on European maps changes only in 1560s, which correlates with the change in Japan’s representation on the Chinese maps. On the maps of Bartolomeu Velho (1561), and Fernao Vas Dourado (1568) the three main islands of the Japanese archipelago are represented, somewhat distorted but mostly close to reality. On the first map there are four islands (Honshu, Kyushu, Shikoku, perhaps Hokkaido or Sado), on the second there are three (Honshu, Kyushu, Shikoku). Both representations of Japan—Velho and Vas Dourado—were included by Abraham Ortelius in the first edition of his famous atlas Theatrum Orbis Terrarum, printed in Antwerp in 1570. It seems that Velho and Vas Dourado used different sources, but it looks like Gyōki-type maps were the basis of both representations. By assumption, professor Nakamura suggested that Portuguese cartographers could rely on the drawings which Japanese and Portuguese sailors, explorers and pirates made by memory (Nakamura 1939: 118–119).

European cartographers had originally received indirect information about Japan, such as the number of islands and their location, through China. This information became available to Europeans when they traveled to China. Such indirect perceptions reflected the traditional view of Japan that existed in the Middle Kingdom for centuries. The change in vision and representation of the Japanese archipelago on the Chinese maps had an impact on European maps.

Throughout world history, maps, and especially charts of sea routes, were among the most secret documents in every country. Sometimes mapmakers' lives depended on the secrecy of maps. The tragic death of Bartolomeo Velho (?–1568) is an example. There is little information about his life and biography. Portuguese historian Armando Cortesão wrote about the letter of one cosmographer to Charles IX, king of France. He believed that it was Velho, who wrote that he had secret information about three thousand leagues of coast rich with gold and silver. The cosmographer was taken into the royal service, arrived in France in 1567, but in 1568 he was killed. It is believed that the Spanish or Portuguese court, concerned that the mapmaker should disclose secret information about discoveries in Asia, arranged to have him disposed of (Cortesão 1935: 239–243). His representation of the Japanese Archipelago was outstanding for the mid-sixteenth century, close to the Archipelago's actual shape. The delineation, north-south axis orientation, and data provided on the islands of Japan were quite incredible. Among place names there are imperial capital Miaco (Miyaco, Kyoto, placed too far north), the Minas da Prata (silver mines), Tonsa (Shikoku island), Cagaxima (Kagoshima on Kyushu island) and Tanaxima (Tanegashima island). In the west the south tip of the Korean peninsula is indicated. The shape of the Japanese Archipelago is close to the configuration used on the so-called Gyōki maps, but is charted on an axis unfamiliar for Japanese maps.

The Netherlands were to dominate European map production for over a century, from the sixteenth to mid-seventeenth century. The principal figures in this development were Gerard Mercator (1512–94) and Abraham Ortelius (1527–98). Secrecy of Asian maritime routes seemed to be the main reason why on the Gerard Mercator map of the world (1569) the Far Eastern archipelago was still peculiarly represented as one big island with two chains of small isles on north-east and south-west sides, though Portuguese depictions of the Far Eastern empire had already been made. The Ortelius-Teixeira map appeared after the Europeans had landed on the islands and got a chance of direct observations. Historians of cartography argue that the map that provided the basis for the Ortelius-Teixeira map was the map of the Japanese islands made by Portugal's Ignacio Moreira. According to extant documents, in designing his map Moreira used first-hand information obtained during his own travels and the information provided by skilled Japanese, particularly that of Gyōki-type maps. However, the manuscript map he had made did not survive—even a copy of Moreira's map that was included in Valignano's manuscript 'History of the Church in Japan' (1601) disappeared, and none of the extant copies now contains the map (Fig. 8).

Fig. 8 Ortelius-Teixeira first separate map of Japan

Ortelius-Teixeira's manner of depicting the Japanese Archipelago had a great impact on the Martino Martini's map of Japan first published by Blaeu in *Novus Atlas Sinensis* (1655), though there are several differences. They are:

- varied shape of Shikoku and Kyushu islands;
- different number of depicted small isles near the western and eastern shores of the archipelago;
- the northernmost island of the archipelago is marked and named Eso;
- Korea is correctly depicted as a peninsula. Its southern side follows Dutch manuscript maps (Walter 1994: 44).

The representative code of the Gyōki-type maps is strict and laconic, though the Portuguese artist used map symbols and representation techniques adopted in the European cartography. For example, Teixeira marked the provinces and the capital Meaco (Miyako, Kyoto) with a symbolic castle which on medieval maps remained a distinctive feature of Western cartography (Rugieri's map of China, the Florentine map of Japan etc.). As a rule, mountains and rivers were not represented on-type maps (with the exception of rivers drawn on Nanban screen maps). In line with Western cartography rules, Moreira-Teixeira marked rivers and chains of mountains. They are anonymous, perhaps for the same reason that Father Schütte speaking of the Moreira map noted—that "the names of the rivers and the inland regions are not mentioned as they are insufficiently known" (Schütte 1962: 125).

6 Cross-Influence of East-Asian and Western Cartographies

As Europeans became directly acquainted with maps made by East Asian cartographers and made their own measurements of the islands, the representation of Japan on European maps was changed. At the same time, as East Asian cartographers got acquainted with Western maps, they borrowed their representative code, techniques and ways of representation.

Thus, there appeared Ishikawa Ryūsen's (石川流宣 1687–1713) maps in Japan, Chōnhadō atlases in Korea and Selden-type maps in China. Chōnhadō—Sino-Korean popular atlases for everyday use of the eighteenth and nineteenth centuries—are a rare example of East Asian cartography (Dorofeeva-Lichtmann 2012; Nakamura 1947; Pegg 2014: 68–82; Simonova-Gudzenko 2013: 55–56; Unno 1990: 40–41, 2004: 246–277). The so-called 'Selden map' (1606–24), as experts in the history of cartography unanimously believe, is a portolan, a map of sea trade routes, but its dating and authorship remain vague. This Chinese map of East Asia again became the focus of scientific discussion and studying since 2013, thanks to the American historian Robert Batchelor.

Ishikawa Ryūsen was one of the most popular Japanese cartographers of late seventeenth-early eighteenth centuries. According to historians of Japanese cartography, his maps were popular for over a century, and were something of a bestseller (Miyoshi 1989: 2; Uesugi 2010: 201). They were printed in Edo, Kyoto and Osaka workshops. For example, his map of the Japanese archipelago (日本図 Nihon zu) was published 28 times during the eighteenth century (Miyoshi 1989: 9). Maps had different names, size, set of data, accompanying tables and textual information, were monochrome or polychrome. However, on all Ryusen's maps the archipelago's form retains the main features from Gyōki-type maps. Like the oldest extant Gyōki-type map (1305), Shōmyōji zu, the artist has rendered foreign countries—Korea (Chosen), China (Kara/Morokoshi)—close to the map's borders, and though Ryusen changed the names of the countries, he kept the Gyōki-type way of representation as a whole, depicting Korea larger than China. He also marked a number of islands—Oki, Ryūkyū, Rasetsu koku (country of the raksasi), Nyogoga shima (island of women), Kari no shima (Northern uninhabited island), etc. It must be emphasized that on Ryūsen's maps Mokokoku (country of the Mongols) is missing, though on early Gyōki-type maps it occupied a major space, and the archipelago's northernmost island, Hokkaidō, was added.

Today copies of Chōnhadō atlases can be found in the collections of many libraries and museums everywhere in the world. These atlases vary by name and size, they can be manuscript and printed, colored and monochrome (Paris, Musee Guimet, Chidō 27 × 27; Lingan University, Tenkantu, 85.2 × 63). But all are similar in content: each is a round map of the world, including maps of China, Japan, Ryūkyū, Korea, and eight Korean provinces. The order of the maps might change, but the map of China always follows the world map. Korean cartographers of the eighteenth-nineteenth centuries represented Japan according to Gyōki-type maps, although the archipelago had acquired a different, rather square shape, and had little resemblance to its prototype—the Buddhist ‘vajra’. Perhaps this change was due to re-interpretation of Chinese spatial concepts. The archipelago retained a southern orientation like on the Kangnido map, which sets the representation of Japan apart from other maps in those atlases, which are orientated to the north.

The Chinese map of East Asia, a so-called ‘Selden map’ (1606–24) belonged to the English jurist and law historian John Selden (1584–1654) as part of his private collection, and was given after his death as a bequest to the collection of the Bodleian Library in Oxford. It seems that the map was made based on several different, mostly Chinese maps, as well as the world map of Matteo Ricci (1552–1601) (Wallis 1965: 38–45; Day 1995: 94–117). Discussing the origin of the map, Batchelor notes that it was probably made for Li Dan, a major Chinese merchant, the owner of the trade flotilla. Li Dan was a successful businessman, but about 1607 he was arrested in Manila for debt and condemned to the galleys. He escaped from prison to Hirado, Japan, where with Chinese help and money Japanese merchants joined forces with Dutch and English trading companies to create a powerful merchant fleet. His ships went from Japan to Siam, Burma, Champa, Tonkin, Manila, Taiwan, Guangzhou and Quanzhou (Batchelor 2013: 37–63, 2014).

On the Selden map, Japan is depicted a little fantastically, but in fair detail. Topographic and administrative information is marked on the image of Japan as well as on the whole map. Inscriptions such as the standard word for ‘province’ (州, not 国 usual for Japanese maps) and place names were written in Chinese. According to the transcription of names carried out by Batchelor (2013: 48), the three major Japanese islands are not separated, presented rather as a single island. In the northern part of Japan, provinces, which were probably unknown to the cartographer, are marked like Gyōki-type ovals, while on the rest of the map province borders are not marked. Among the unknown provinces of eastern Honshu, two provinces, Kazusa and Shimosa, are named. These provinces place names are mentioned on the early European maps of Japan (Blankus 1617; Cardim 1646; Dudley 1646). At the far northern tip of Honshu, the main island, a small island named Sado, not Hokkaido, is drawn. That could indicate similarity of the Selden map with Matteo Ricci’s map where a similar small island can also be found in the north of the archipelago under two names, Sado and Hokuriku. Orientation of Japan on the map is given strictly on the north-south axis, hailing back to Velho’s map (1561). Thus, on the Selden map the influence of Gyōki-type maps could also be seen.

The Ortelius-Teixeira cartographical image of the Japanese archipelago served as the prototype for the representation of Japan in many European and even Ottoman maps for a long time, until as late as the nineteenth century. I would like to mention two remarkable cases. In 1679 Jean Baptiste Tavernier (1605–1789), a French adventurer and merchant, when publishing the supplementary book of his six volumes of voyages, added a description of Japan and a printed map of the archipelago (Tavernier 1679). This map was a model for the first printed map of Japan in Russia (Korovin 1734). The image was identical, but all place names and explanations were translated into Russian. Among the seventeenth and eighteenth century maps, there was a map of the archipelago illustrating the manuscript Cihannuma of the famous Ottoman historian and geographer Kâtip Çelebi (1609–1657). It is very close to the Ortelius-Teixeira map but with inscriptions and place names translated into Ottoman Turkish (Kâtip 2013: 70–71; Tōyō Bunko 2007: 262).

7 Conclusion

To summarize our study the following conclusions can be made. The main reason for the creation of Gyōki-type maps seems to lie in the change of spatial ideas about the world and place of Japan in it, prompted by unsuccessful Mongolian invasions to the Japanese Islands in 1274 and 1281 (Fig. 9).

The maps of this type have the following characteristics:

- the representation of three large islands, excluding Hokkaidō;
- the division of the territory into 66 provinces, drawn in oval shape;
- the orientation of the archipelago on the east-west axis;
- a laconic visual code and use of administrative rather than terrain information;
- in early Gyōki-type maps the shape of the archipelago is close to Buddhist ritual object 'vajra';
- most Gyōki-type maps are not the representation of just the archipelago, but also of the world, at least East Asia.

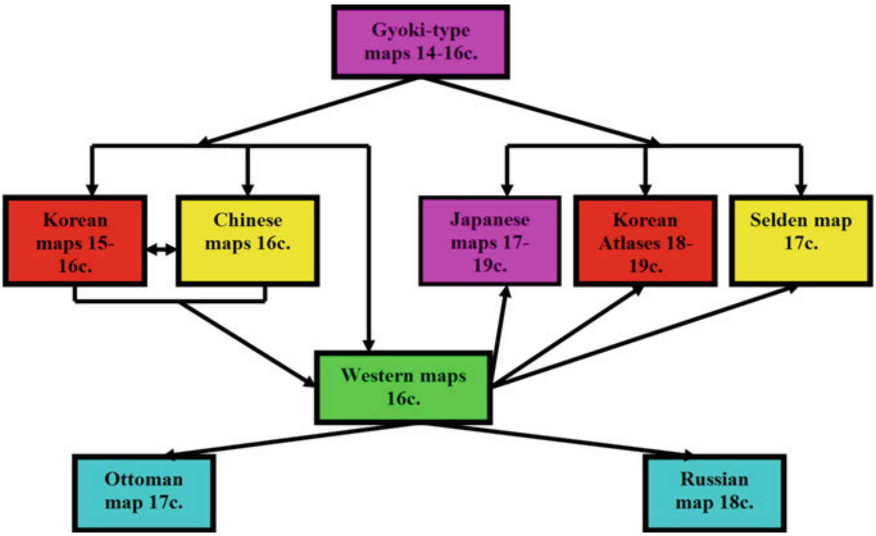

Fig. 9 Scheme of the cross-influence of East-Asian and Western cartographies

The Gyōki-type cartographic image of the Japanese archipelago created in the early fourteenth century determined the change in the perception of the Far Eastern country, not only by its neighbours, China and Korea, but also in the West. The image of Japan on East Asian and European maps of the fifteenth-sixteenth centuries is a reflection of the Gyōki-type representation of the archipelago.

However, interaction between East Asian and Western traditions was mutual. At the time of the revival of interest in Gyōki-type maps in East Asian countries in seventeenth-eighteenth centuries they absorb such features of Western cartography as a specific visual code, attention to terrain objects, etc.

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Maps as Knowledge Vehicles: Insights from the Collections of Leiden University Library

Radu Leca

Abstract The present study combines three research areas: the history of cartography in early modern Japan, the history of knowledge exchange in Japan, and the history of the Leiden University Library collections. A group of Japan-related nineteenth-century maps are analysed in terms of the various ways in which they can be related to specific encounters between historical actors. Their significance is enhanced by the fact that they bear traces of their use, thereby allowing the reconstruction of the material processes through which geographical knowledge was exchanged through social networks.

1 Methodology

My interpretation of these exceptional documents draws on two fields of inquiry. The first are comparatively recent theoretical approaches to the history of cartography stemming from a relativisation of historiographical narratives that has been summed up with the term 'cartography without progress' (Harley 1989, 2001; Edney 1993, 2007). A useful distinction has been made between maps as discrete items and mapping as a practice or process (Kitchin and Dodge 2007). Highlighting the processual and performative nature of maps enables the recovery of their role as intermediaries in processes of knowledge negotiation (Wood 2002). On the other hand, the role of maps in knowledge transfer has been analysed in terms of 'immutable mobiles', according to which maps are examples of knowledge harvested by European explorers and compiled into finished products (Latour 1986). The Eurocentrism of this view has been challenged (Bravo 1999; Morris-Suzuki 2014). However, even within these critiques a deeper underlying assumption is at work: that knowledge accumulates centripetally through official institutions and public assignments, and that in this process knowledge is filtered and distilled of non-objective factors. That positivist assumption can be countered by a deeper

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focus on the discursive context of maps, their social and cultural context, in other words their 'map worlds', that reveals their reliance on social protocols and individual encounters (Edney 2018: 78; 'map world' is derived from the 'art world' in Becker 1982, analogous to the discussion of the 'book world' in early modern exchanges between East Asia and Europe in McDermott and Burke 2015: 9). Concomitantly, the degree to which processes of knowledge transfer rely on the agency of maps as material objects is beginning to be investigated through concepts such as that of the 'cartifact' (Brückner 2011).

The focus on the material agency of maps is comparatively novel in cartographic history, and would benefit from integrating methodologies and concepts from art history, a field where the 'material turn' in the humanities has been the most transformative (Clunas 2016). By referring to maps as 'knowledge vehicles', I adapt the concept of Bilderfahrzeuge, or 'image vehicles', devised by the art historian Aby Warburg and currently the focus of an international research project, to the history of maps. Similar to the ways in which Warburg and current research talk of 'vehicles' as carriers or containers of images and ideas as they circulate across time and space (Krispinsson 2015: 245), my discussion points to the social agency of geographic knowledge as embodied in cartifacts.

The proximity between artistic objects and maps is also true in terms of their makers. Most maps in early modern Japan were not produced by professional cartographers but by professional artists. For example, Yokoyama Kazan 横山崋山, a painter from Kyoto that had studied realistic techniques, produced an appealing panoramic view of Kyoto (Fig. 1). Kazan was probably inspired by an

Fig. 1 Yokoyama Kazan (1784–1837), *Karaku ichiran zu* 華洛一覧図 ('View of Flowery Kyoto'), 1808. Ser. 390

earlier painting: *Kyōraku fukanzu* 京洛俯瞰図 ('Bird's Eye View of the Capital') painted on silk by the artist Maruyama Ōkyō in 1791 (Kyoto Kokuritsu Hakubutsukan et al. 1988: 158; Smith 1988: 13–14). Despite the realistic style, Kazan's depiction also contains elements of idealization: for example, the towering building of the Great Buddha Hall 大仏堂 of Hōkōji 方広寺 temple had burned to the ground ten years before (Leca 2017: 131). The view also contains topographical information: its content overlaps to a large degree with that of contemporary maps of the city (Uesugi 2016). The aesthetic and the pragmatic were thus often inseparable, and played equal roles in map design. Conversely, aesthetic and scientific knowledge were exchanged within largely overlapping social networks that used compatible protocols of interaction, as discussed further.

2 Types of Knowledge Exchange Through Cartifacts

For the purpose of the argument, I have grouped case studies into six types of knowledge exchange that they exemplify, according to the identity of the social actors involved.

2.1 Geographic Knowledge Exchange in Japan

The first group illustrates knowledge exchange within a network of Japanese intellectuals (Uesugi 2010). Most of the time this occurred in small social circles that forged 'enclave identities' (Ikegami 2005: 147). Poems, ink drawings as well as maps were exchanged as part of the social protocol of Chinese literati culture, where penmanship and learned references were appreciated. An example is the meeting between the explorer and mapmaker Mogami Tokunai 最上徳内 (1755–1836) and the collector and patron Kimura Kenkadō 木村蒹葭堂 (1736–1802) at the latter's home in Osaka in 1801 (Funakoshi 1997: 110–11). We can imagine Kenkadō proudly bringing out some of his prized maps. What caught Tokunai's eye was an imported Chinese map from Kenkadō's collection that had originated in the Jesuit-led survey of China during the reign of the Kangxi emperor (Nakamura 1969: 18; Takami Senseki, discussed further, also owned a copy of the same map). Tokunai made a tracing, but cropped out the part of the original map that showed continental China (Fig. 2). The process of copying or tracing maps amounted to a 'rereading', a form of audience response (Harris 2015: 51). In this case, Tokunai's choices when copying indicate his interest in the territories north of Japan, including Sakhalin, which were perceived as under threat of Russian occupation. He had travelled to Sakhalin in 1792 and 1808 so he knew the area well, but was still looking for any comparative source that would help him understand the area better (Dettmer 1997; another copy of the same map owned by Kenkadō was included in Yamada 1811: 20).

Fig. 2 Mogami Tokunai (1755–1836), *Sagarentō no zu* 薩哈連島之図 ('Map of Sakhalin'), 1801. Ser. 213

Besides its strategic importance, this tracing provides a material witness of a social occasion where geographical information was exchanged according to the protocol of literati meetings. Tokunai's copy also shows that the network of knowledge exchange was by no means restricted to the Japanese intelligentsia: the Chinese map copied by Tokunai had been the result of a survey of the Chinese empire ordered by the Kangxi emperor in 1708. It was carried out by teams consisting of Manchu Qing officials and European missionaries, with the prime meridian passing through the Qing imperial capital of Beijing (Cams 2012). This is another example of an exchange of cartographic knowledge, but this time Western

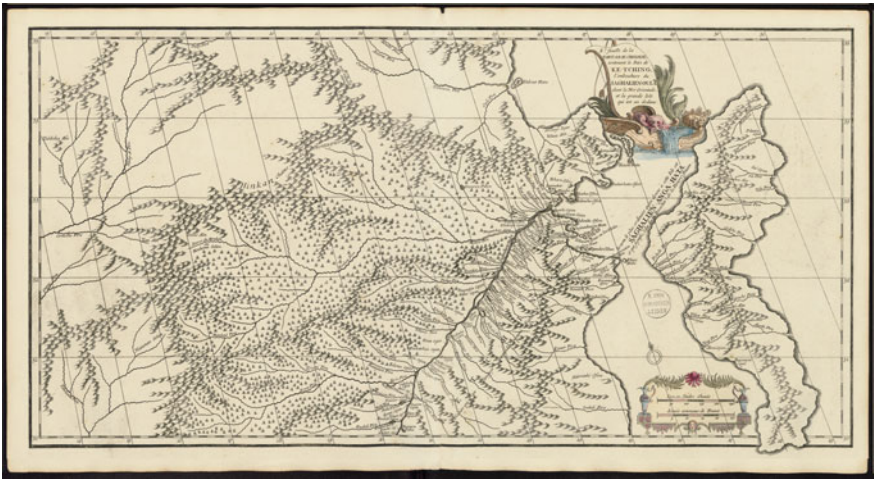

Fig. 3 Jean Baptiste Bourguignon d'Anville (1697–1782), *Xe feuille de la Tartarie Chinoise, contenant le Pais de Ke-Tching l'embouchure du Sagahlien Oula Dans la Mer Orientale, et la grande Isle qui est au dedans*. COLLBN Atlas 197, map 28

techniques were employed as part of a state-led Qing imperial surveying project that also fed into the cartographic conversations of European intellectuals: the atlas *Huangyu quanlan tu* ('Overview Maps of the Imperial Territories') formed the basis for copperplate-printed maps included in Jean-Baptiste Bourgouignon d'Anville's *Description géographique, historique, chronologique, politique, et physique de l'empire de la Chine* (Paris, 1735) (Cams 2013) (Fig. 3). The maps' details of the interior of China were far superior to any previous Western map or atlas, but the Sakhalin area was comparatively less detailed and still outside the grasp of Western geographers, as suggested by Sakhalin's southern tip overstepping the map's border.

The specific meeting between Tokunai and Kenkadō also illustrates the proximity of scientific and artistic networks: Kenkadō was also a painter, student of botany, publisher, and patron of numerous artists (Beerens 2006: 90–91). A similar example of overlap between artistic and cartographic activities is that of Takami Senseki 高見泉石 (1785–1858). A high-rank samurai official of Koga domain, he was part of an informal network of 'Dutch knowledge' scholars preoccupied both with updated information and with entertaining novelties. Senseki used a Dutch name—Jan Hendrik Daper—and had also published studies of snowflake shapes and a 'Table of Post Stations and Distances along the Route from Edo to Nikko' measured with Western methods. On the seventeenth day of the seventh month of 1827, Senseki wrote in his diary: "I went to see Inomata from the Astronomy Bureau, who translated a map of Netherlands by Weygand as well as a diagram of the Sun in relationship to the Earth divided according to the twelve months, and I will soon make copies of these maps." (Ida 2013: 7). After retirement, Senseki corroborated the copy of Weygand's map with more recent sources and added a colophon addressed at fellow enthusiasts in Dutch knowledge (Fig. 4). It mentions Belgium's independence and the resulting eleven provinces of the Netherlands, which is coherent with the boundary lines on the map. The prominent 'Dutch knowledge' scholar Katsuragawa Hoshū 桂川甫周 (1751–1809) contributed a text in classical Chinese. The hachures of mountain areas in Senseki's woodblock-printed map copy the look of the copperplate-printed source map and show the skill of the carver Takeguchi Teisai 竹口貞齋. This and the preceding example show that there was a branch of intellectual endeavour that was compatible with Western science in its search for accurate knowledge. This was nevertheless understood within the intellectual paradigm of Sinocentric culture, for which 'Dutch knowledge' was a new branch of a millennia-old canon.

2.2 *Corroborated Knowledge on a Japanese Geographer's Work Desk*

The second type of material processes of knowledge exchange shown by the maps in the Leiden University Library collections is that occurring on the work desk of a professional cartographer and surveyor: Mogami Tokunai. Besides copying maps obtained through social networks, Tokunai was also engaging in an indirect conversation with Russian geographers by tracing their maps (Figs. 5 and 6). The larger context of Tokunai's activity is the European interest in the Northeast of Asia including the islands of Hokkaido, Sakhalin, the Kuriles and the Kamchatka Peninsula became the focus of interest for French and Russian expeditions starting with the end of the eighteenth century. The Japanese authorities reacted by sending multiple surveying expeditions to what were then foreign territories, led by Mogami Tokunai, Mamiya Rinzō 間宮林蔵 (1775–1844) and Inō Tadataka 伊能忠敬 (1745–1818) among others (Walker 2007). They did not reach further than south Sakhalin, but managed to draw maps of territories further north based on local informants.

In 1804, Nikolai Petrovich Rezanov was sent by the czar Alexander I as his official ambassador to Japan. Sailing on a ship commanded by admiral Krusenstern, Rezanov arrived in Nagasaki in October 1804 and spent six months waiting for an official reply (McOmie 2007). The Japanese authorities ultimately refused, nevertheless accepting the Japanese castaways brought back by the Russian expedition. Upon leaving, the Russian ambassador gave small presents to the Japanese interpreters, including a pocket globe and maps of Russia (Langsdorff 1813: 265). Tracings of those Russian maps circulated among intellectuals interested in Western knowledge, especially through a 1794 work by Katsuragawa Hoshū entitled *Hokusa bunryaku* 北槎聞略 ('Tales of a Northern Raft'), based on the interrogation of Daikokuya Kōdayū 大黒屋光太夫 (1751–1828), a shipwrecked sailor who reached Sankt Petersburg before being brought back by Adam Laxman (Siary 2004; Screech 2000: 120–121).

Fig. 4 Takami Senseki (1785–1858), *Shin'yaku orandakoku zenzu* 新譯和蘭國全圖 ('Newly Translated Map of Holland'), 1849. Ser. 175

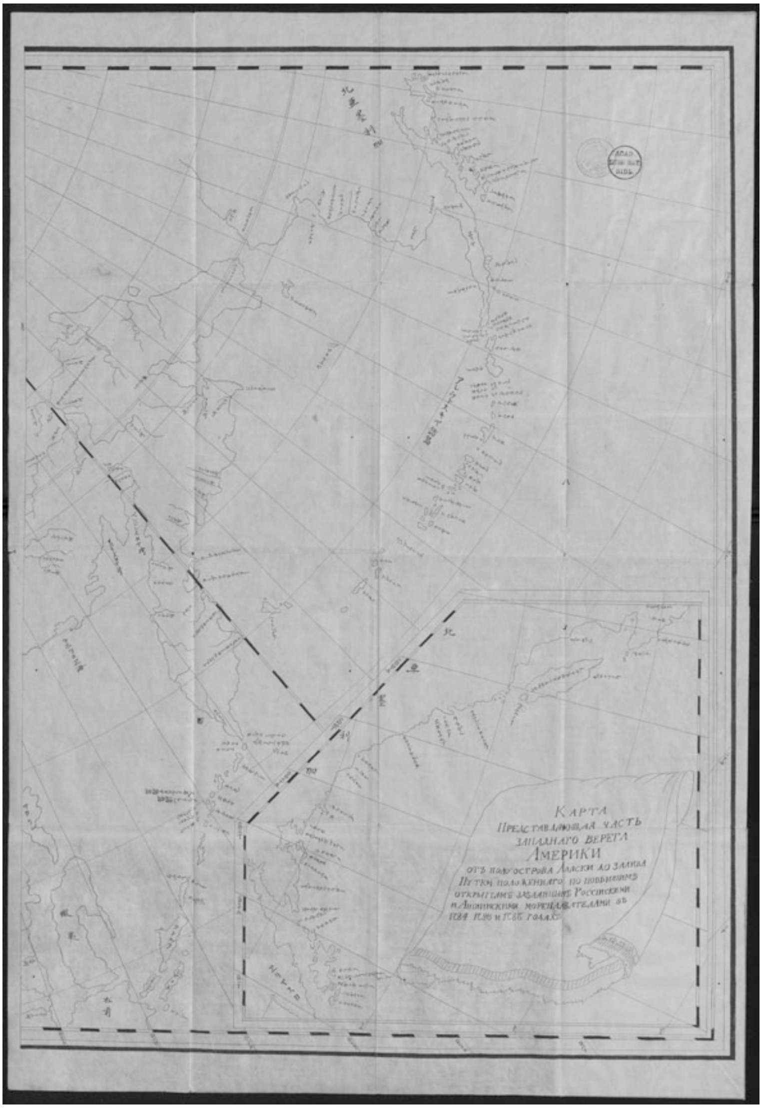

Fig. 5 Mogami Tokunai, *Kamushasuka no zu* 東察加之図 ('Map of Kamchatka'), 1804. Ser. 186

The above explains why the inscription below the front title of one of Tokunai's tracings reads 'the arrival of Rezanov, in the service of Russia, in the winter of 1804' (Fig. 5). Another tracing by Tokunai bears a Russian title that translates as 'Map of the Discoveries Made by Russian Sailors on Repeated Trips in the North of America and the Surrounding Areas. Compiled by the Russian Academy of Sciences' (Fig. 6). The source is the 1774 version of a map by Gerhard Friedrich Müller (1705–1783), co-founder of the Imperial Academy of Sciences in Sankt

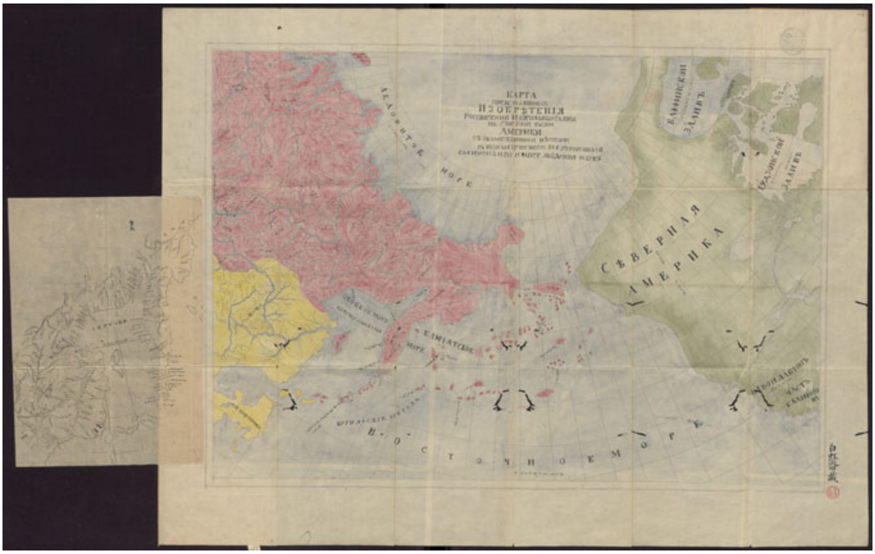

Fig. 6 Mogami Tokunai, *Hokkai* 北海 ('The North Sea'), before 1808. Ser. 194

Petersburg (Hirai 2017). Widely circulated and translated in English and French, this map presented the newest information on this area, except the shape of Sakhalin Island and the coastline south of the Amur River which relied on the survey of China during the Kangxi era. Next to this large tracing, Tokunai attached another tracing of the same area from a separate source. This provides a rare glimpse into Tokunai's work and thought process, consisting of corroborating other Japanese explorers' maps with Russian and European maps to extract the best understanding of the area's geography.

2.3 *The Exchange of Cartifacts as a Form of Transcultural Civility*

The third type of knowledge exchange shown by the Japanese maps kept in the Leiden University Library is the result of direct interaction between Japanese and European intellectuals. The mutual exchange in scientific knowledge and the intensity of personal relations between Japanese intellectuals and Western visitors increased starting with the last decades of the eighteenth century (Winkel 2016: 232–241). Concomitantly, this was a tumultuous period in Japan, usually discussed in antagonistic terms between a struggling administration and various incursions by foreign ships. In this context, cartographic knowledge was at the forefront of national security. But that was the shogunate's perspective. In practice, Nagasaki interpreters mediated a limited form of knowledge exchange between Japanese intellectuals and Dutch traders. Maps were part of their intellectual conversations.

The majority of Japanese maps in the Leiden University Library originate in the collections of Phillip Franz von Siebold (1796–1866), a surgeon of the Dutch East India Company who documented all aspects of Japanese life at an unprecedented scale during his stay in Japan from 1823 to 1829. On his visit to Edo as part of the Dutch trading delegation, Siebold exchanged maps with, among others, the shogunal chief astronomer, Takahashi Kageyasu 高橋景保 (1785–1829), also known as Globius. This was officially prohibited, but had been allowed in practice. Siebold gave Kageyasu a Dutch translation of James Kingston Tuckey's *Maritime Geography and Statistics*, and Krusenstern's account of his *Voyage to Japan*, that Kageyasu would later translate. Siebold's dedication to Kageyasu as Globius addressed him deferentially with Most Honourable Sir, as he would a fellow Dutch scholar. In exchange, Kageyasu gave Siebold copies of Inō Tadataka's comprehensive map survey of the Japanese archipelago as well as other maps of the islands north of Japan. Siebold was thrilled by this exchange but he probably understood that these maps were a sensitive issue. On the sixteenth day of the fourth month of 1826, upon meeting another important cartographer, none other than Mogami Tokunai, he wrote the following journal entry not in the usual Dutch but in Latin—a language which the Japanese interpreters could not decipher:

> Most happy day! A Japanese man named Mogami Tokunai had been asking to meet me for two days, and showed exquisite learning in mathematics and all branches of science. After discussing various Sino-Japanese as well as European mathematical issues, he showed me under sacred seal of silence maps that delineate the area of the Ezo ocean and Karafuto island and made them available for my use for a while – certainly a most precious treasure (Siebold 1897: 186; Nakamura 1969: 15; I am grateful to Dick Raatgever for checking my translation).

It is odd that a Japanese geographer would share sensitive cartographic material with a foreigner upon first meeting (Winkel 2017). Though Siebold might have compressed the timeline, his journal entry nevertheless conveys an atmosphere of intellectual collaboration. One of the maps gifted by Tokunai to Siebold was the copy of the Kangxi survey map in Kenkadō's collection (Fig. 2). Through this gift, Tokunai acknowledged Siebold as equal participant in the social protocol of Japanese intellectuals.

The knowledge network into which Siebold entered probably provoked the Siebold incident. This was officially triggered by the discovery of prohibited items, most notably maps, on the storm-damaged Dutch East India Company ship Cornelius Houtman in 1828. It led to the arrest and even death of several of Siebold's Japanese acquaintances, and the house arrest and eventual banishment of Siebold himself. However, it is likely that an animosity between the cartographer and explorer Mamiya Rinzō and Takahashi Kageyasu led to the former denouncing Siebold as a spy in a letter to the authorities, even before the items' discovery on the ship (Plutschow 2017: 19; also Siebold's own explanation—Hale 1841: 215) Part of the confusion was due to the similarity between the spelling of Siebold's native land of Prussia with that of Russia, leading to a suspicion of espionage. The

Japanese authorities did not fully grasp the nature of scientific exchange, and were bound to confuse it with spying. The Siebold incident was therefore not primarily related to maps but to the social relationships into which they were embedded. It was the result of the betrayal of trust and of miscommunication between a dynamic intellectual network and a cautious administration.

2.4 Japanese and Western Cartographic Sources Side by Side on an European Work Desk

Another group of maps from the Leiden University library collections originates in the work-desk of a European cartographer. Upon his return to Leiden, Siebold integrated knowledge from Japanese sources for the compilation of his own maps of Japan. These were printed both as part of the volumes of his book on Japan, *Nippon. Archiv zur Beschreibung von Japan* starting with 1832, and as separate sheets in 1852 (Siebold 1852). On the one hand, Siebold made use of Japanese maps by reproducing them in the form of tracings prepared for printing on copperplates. For example, Fig. 7 shows the accumulated record of expeditions by Mogami Tokunai and Mamiya Rinzō. To honour the latter's explorations, Siebold gave the name Mamiya to the elusive strait between Sakhalin and the mouth of the Amur river (or Manko in the language of the Santan traders of Tungus ethnicity). In this map sheet, Siebold is laying open his working method of assembling different maps of the same territory. This presentation format also exposes the practice of 'ethnonavigation', the appropriation of already inhabited territories by Western geographers through Western names (Boyle 2018). For example, the main map shows De Langle Bay, so named by La Perouse's expedition, on Sakhalin's western coast. However, in the copy of Mamiya Rinzo's 1808 map on the right, the bay's local name is transcribed: Tomarioro, meaning 'anchorage place'. Juxtaposing these toponyms exposes their social nature: they reflect the social networks to which their assigners belong. Siebold's methods are also remarkably similar to those of Mogami Tokunai, who was also juxtaposing various cartographic depictions in his study of the area around Sakhalin and Kamchatka (Fig. 6). The juxtaposition practiced by Siebold and Tokunai points to a recognition of the social life of cartifacts, of an ecosystem of knowledge in which cartifacts are not anchored in definitive statements but are allowed to circulate and converse with their equivalents. This is related to the conceptualisation of Siebold's book as an 'archive': it was meant as a reference work that adhered as closely as possible to original sources, to the point of reproducing them as such.

On the other hand, Siebold made use of the Japanese maps he had obtained by compiling them into his own cartographic productions. The drafts of Siebold's general map of Japan preserved in the Bodel Nijenhuis collection in Leiden University Library embody the laborious process of compiling the dense layers of toponyms and pictograms, usually obscured in the final product (Fig. 8) (Storms

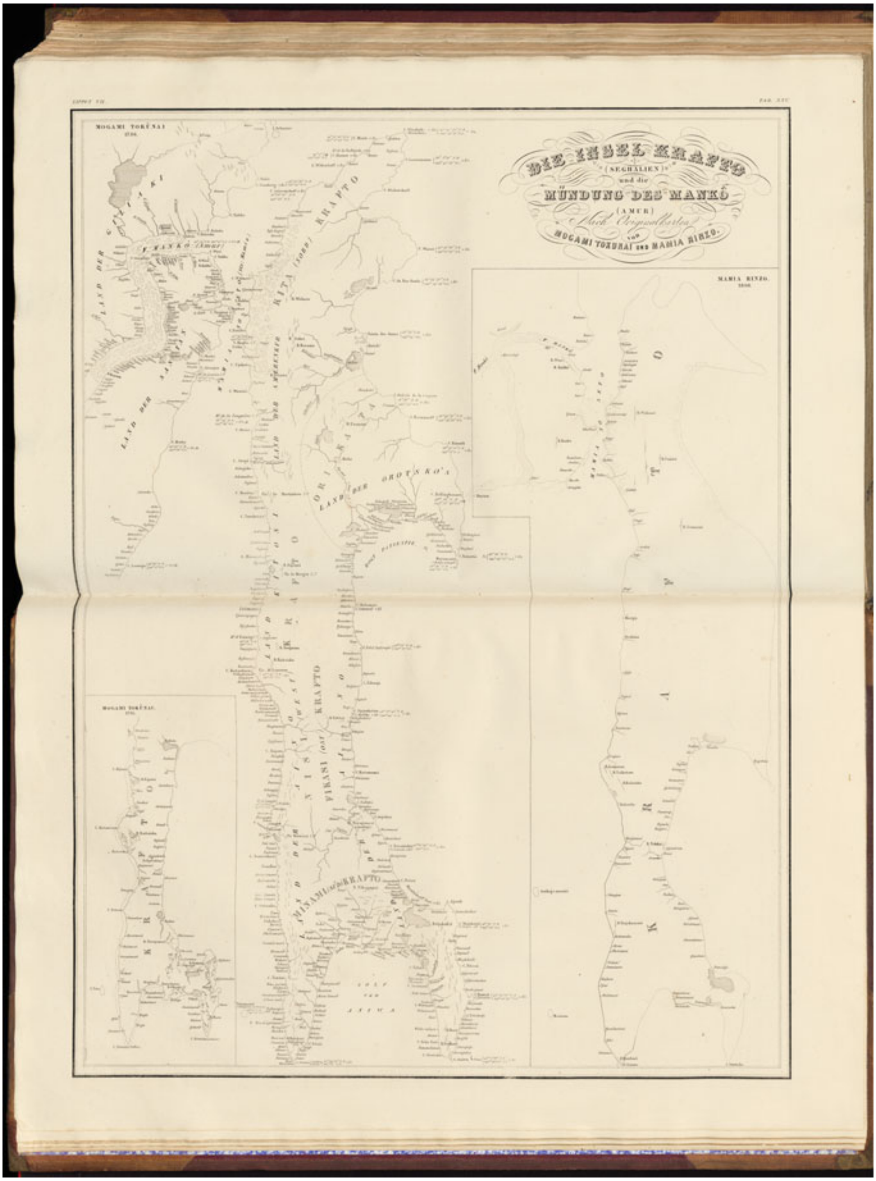

Fig. 7 P. F. von Siebold (1796–1866), *Die Insel Krafto (Seghalien) und die Mündung des Mankô (Amur) Nach Originalkarten von Mogami Tokunai und Mamia Rinzo*. Table XXV of *Nippon. Archiv zur Beschreibung von Japan*, vol. VII. COLLBN 20073 C 2, map 1

2018: 350). Siebold demands for toponyms to be scraped out, islands and rocks to be added, safe harbours and rock formations that might hinder sailing to be pointed out. When necessary, he overlays annotated pieces of paper on the map proof to

Fig. 8 Proof copy of P. F. von Siebold, *Karte vom Japanischen Reiche.* COLLBN Port 202 N 55c

increase clarity. He oscillates between Western and Japanese place-names, such as in the case of Oho-shima west of Izu peninsula, and finally decides to record all existing names of a geographical feature, regardless of origin (Fig. 9). Siebold openly quotes his sources, and the languages of place names expose the diversity of sources used for this map's compilation: Japanese, Korean, German, Dutch and even French. For example, 'Rochers de la Nadiejda' is an echo of perhaps Siebold's most important Western source, Krusenstern's *Atlas*. Tsushima and Iki islands are slightly enlarged, following Sekisui's design, while the Broughton and Krusenstern straits indicate again the compiler's sources. These are blended with Siebold's own measurements on his return trip from Edo to Nagasaki in 1826, by which he concluded that the Japanese prime meridian passing through Kyoto is placed at 135° 40′ longitude from Greenwich (Shīboruto Kinenkan 2000: 76–77; Walter 1994: 204). The seldom preserved drafts reveal the extent to which toponyms and all other cartographic elements are the product of negotiations between practical and aesthetic imperatives within social networks.

Accordingly, the published version of Siebold's map is perhaps the only Western map of Japan to acknowledge the Japanese measuring system: it bears a double longitude scale relative to Greenwich and to the Japanese reference system centred on Kyoto. This shows Siebold's high appraisal of his Japanese sources, which he puts on an equal par with Western sources. Siebold's attention to Japanese primary sources is also indicated by the inclusion of a glossary of Japanese geographical terms and phonetical equivalents. The map also has a biographical character: Siebold has marked his itinerary throughout Japan with a thin black line that starts in the ocean near 'Meacsima'. It then continues from Nagasaki over Kyushu through the Inland Sea, where different routes are marked for eastward and

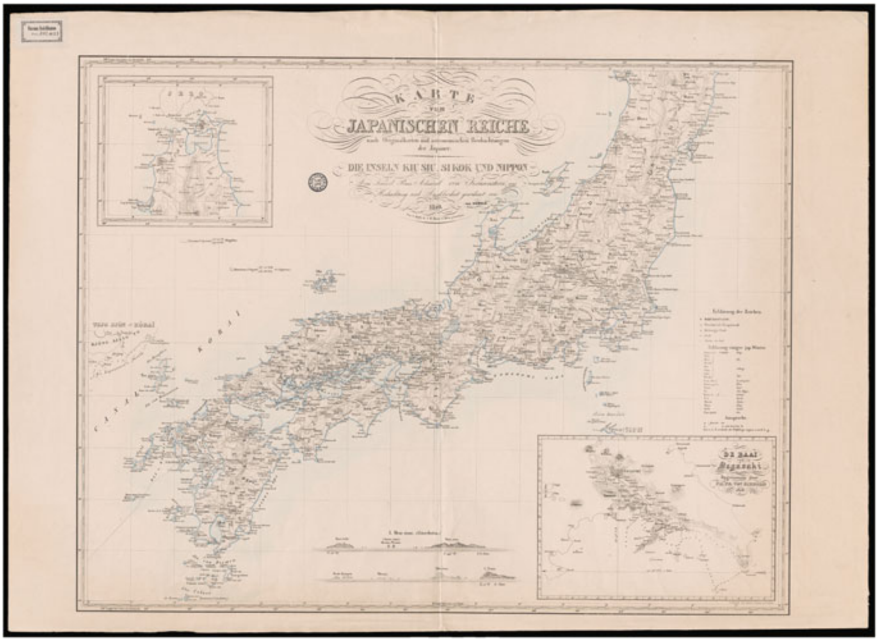

Fig. 9 P. F. von Siebold, *Karte vom Japanischen Reiche nach Originalkarten und astronomischen Beobachtungen der Japaner…*, Leiden, 1840. COLLBN Port 202 N 53

westward sailing—this is very much a mariner's map. The line then retraces Siebold's journey on the Tokaido road until Edo, where he would obtain most of the Japanese sources used for his map's compilation.

2.5 The European Circulation of Knowledge on Japan's Geography

The fifth type of knowledge exchange occurred among European cartographers and navigators. Original Japanese sources had been reproduced in Europe, most notably by Adriaan Reland and Engelbert Kaempfer (Yonemoto 2016). Notwithstanding, navigation charts available before Siebold's publications were incomplete and unreliable. When the US government started planning its expedition to open trade with Japan, it solicited the help of the Dutch government to obtain access to the Japanese maps collected by Siebold. In 1852, George Folsom, the US envoy to the Netherlands, was allowed to consult the maps in Den Haag. However, it is telling that the Dutch government conditioned its cooperation with the socially inflected demand that the expedition would be 'a friendly visit' (Kleinschmidt 2008: n29, quoting Webster 1987: 299–302, 304). Siebold himself did everything possible to join the expedition, but without success. The published account of the expedition attempted to remain objective by praising Siebold's writings and scientific achievements (Hawks 1856: 4, 10, 19–20, 33, 52, 56, 60–61, 229, 325) while decrying his demeanour (ibid.: 69–74, 79). The same mixed reception was also applied to Siebold's maps: their value was acknowledged (ibid.: 230), but their incompleteness (and that of their Japanese sources) was blamed for the grounding of one of the expedition's ships (ibid.: 326). A more positive evaluation of the practicality of Siebold's maps was given in a 1856 report by Lieutenant Captain G. Fabius to Prince Hendrik of the Netherlands, after having circumnavigated a major part of Japanese coast in the Dutch Navy steamship *Medusa*. Fabius wrote: "the charts of von Siebold, which I received as a present from Your Royal Highness and which I have used, were by far the best and really have a lot of merit" (Bernard 2017).

2.6 *Knowledge Exchange in Diplomacy and Academia*

After Perry's expedition in 1853 had ushered a more intense interaction between Westerners and Japanese. In this process, cartifacts found new uses as knowledge vehicles in the diplomatic and academic fields. These overlapped in the activities of Johann Joseph Hoffmann (1805–78). He was part of Siebold's research team and contributed to large tracts of the multi-volume work *Nippon. Archiv zur Beschreibung von Japan* (Beukers 2000). Hoffmann then served concomitantly as the official translator of Japanese for the Dutch government and as the first professor of Chinese and Japanese in Leiden University (Okuda 2011: 7–10). In the former capacity, he met and conversed with the members of the 1862 Japanese embassy to Europe. One of the embassy members, Ichikawa Seiryū 市川清流 (1822–1879), wrote the following in his travelogue:

> 3rd month, 12th day. Cloudy: therm. 62°. Today met Hoffmann, the physician to the king of Holland, at the hotel. He is rather more than 50 years old, has studied Chinese books, and also understands some Japanese. So we communicated with him by writing, and also conversed a little; and though it was like scratching an itching place through one's shoe, yet it afforded some little pleasure to the mind of the traveller. (Satow 1865: 465)

Ichikawa gifted Hoffmann an album of miniature views of Japan (Fig. 10). These views display the skill of the carver in the copperplate-printing technique, and part of the fun was in playing with scale: expansive vistas, such as the fifty-three stations of the Tokaido road and the historical Yamato area shown here, were reproduced in miniature. Such albums were part of a renewal of popularity of panoramic views of Japan's territory in the wake of Commodore Perry's expedition. The views initially anchored the visual imaginary of the entirety of Japan's territory during a time of rapid changes and political instability. They soon found new uses for a foreign audience, either for tourism or for diplomacy.

Fig. 10 Okada Shuntōsai 岡田春灯斎 (1832–1861), *Shinsen dōban saigajō* 新鐫銅版細画帖 (‘Album of Copperplate-printed Miniature Images’), 1853. Ser. 368

Another member of the 1862 embassy, Mitsukuri Shūhei 箕作秋坪 (1826–1886), gifted to Hoffmann the ‘Comprehensive Map of the Great Qing’ published in 1860 (Fig. 11). Although the preface claimed that the original compiler was German, this was a translation of the ‘Map of the Chinese Empire’ attached to Samuel Wells Williams’s *The Middle Kingdom* (New York, 1847). Williams was an American Christian missionary to China who also took up the study of the Japanese language. He sailed to Japan in the failed expedition of the ship Morrison in 1837, and later worked as an official interpreter for the expedition to Japan led by

Fig. 11 Shibata Shūzō 柴田収蔵 (1820–1859), *Daishin ittōzu* 大清一統図 (‘Comprehensive Map of the Great Qing’), c. 1860. Ser. 185

Commodore Perry in 1853. A sketch by Shibata Shūzō 新発田収蔵 (1820–1859) after a Chinese copy of Williams's map was posthumously carved by Takeguchi Takizaburō 竹口瀧三郎, who skilfully reproduced the look of the copperplate print in woodblock (Ida 2014). The insets show the ports open to foreign trade through the 1842 Treaty of Nanking: Shanghai, Canton, Ningbo, Amoy, Fuzhou. This illustrates Japan's interest in China's situation after the First Opium War (1839–42).

The map and its subsequent use constitutes an intriguing case of networks overlapping with dire consequences: the 1837 Morrison expedition had triggered reactions from Japanese intellectuals. Among them was Watanabe Kazan 渡辺崋山 (1793–1841), a painter (not the same as Yokoyama Kazan) who had also completed Takami Senseki's portrait before being officially appointed to oversee the coastal defenses of his Tawara domain in 1832. Kazan had already acquired knowledge on Western geography from Dutch geography books, as shown by his corrections to a draft translation by Koseki San'ei of a geography primer from 1817, *Geographische oefeningen* by Pieter Johannes Prinsen (1777–1854) (Keene 2006: 257 n. 5). Kazan's corrections are phrased in Confucian terms, illustrating the fact that Western knowledge was received in terms of a Sinocentric intellectual tradition (Kazan 1836). When word of the ship Morrison reached Kazan's social network, it was misinterpreted as being connected to Robert Morrison (1782–1834), a prominent Christian missionary to China. Soon after, in a draft entitled *Shinkiron* 慎機論 ('Exercising Restraint'), Kazan displayed his knowledge of Morrison's work and of world geography while arguing for the urgency of appropriate preparation for a possible invasion from abroad (Keene 2006: 153–160). This was one of the items that fed accusations about Kazan wanting to travel abroad, leading to banishment, which he ended in ritual suicide (Cobbing 2013: 14–16). Ironically, a few years later Japanese ambassadors were gifting Europeans an updated map of China made by one of Morrison's successors. Through this gift, the 1862 Japanese ambassadors were displaying their engagement with an international cartographic idiom—a radical change of attitude from a generation earlier.

The overlap of networks goes further: as official translator for the government, Hoffmann was given access to Senseki's map of Holland (Fig. 4) and commissioned to translate the preface. Hoffmann's fully annotated draft is now preserved among Hoffmann's papers in the Leiden University Library (BPL 2186 M:9). In working on this map, Hoffmann was combining his official assignment with his academic interest in various styles of writing in Japan. Hoffmann's draft reverses the direction of knowledge exchange, effectively translating Senseki's synthesis of Western sources back into their original language.

3 Conclusion

After this exploration of different types of knowledge exchange, one major conclusion emerges: the categories of Japanese and European geographers that were employed to classify types of knowledge exchange emerge as secondary, both to forms of social connections and to the material characteristics of cartographic sources. Certain parallel practices can be observed regardless of nationality. Firstly, the mutuality of exchange: maps were part of a system of gift-giving that involved reciprocity and generosity. This was the case for Rezanov's gift of maps to Japanese translators, Siebold's exchange with Mogami Tokunai or the Japanese ambassadors' gifts to Hoffmann. Secondly, the layering of exchange: social networks overlapped, and one person could engage in multiple modes of knowledge exchange. This was the case with Takami Senseki or Kimura Kenkadō, although this phenomenon was not restricted to Japan's case (Edney 2018: 75). Thirdly, the alignment of goals: despite different cultural paradigms, map users and makers recognised their common interest in the increase of knowledge and understanding of Earth's geography. This is apparent in Japanese geographers taking on Latin names such as Globius, as well as in the double scale of Siebold's map of Japan. Fourthly, the isonomy of sources, meaning that map users and makers gave equal weight to their diverse sources, and customarily juxtaposed different representations of the same area. Overall, the exchange of geographical knowledge through cartifacts should be understood as a form of civility, 'a ritual technology of interpersonal exchanges that shapes a kind of intermediate zone of social relationships between the intimate and the hostile' (Ikegami 2005: 29).

This study seeks to bring new insights to aspects of the movements of knowledge in early modernity from a non-Eurocentric perspective, by rethinking cartifacts as integral parts of an intellectual conversation about geographical knowledge. The study of knowledge transfer in early modernity has been dominated by postcolonial theory that emphasizes the agency of the colonial subject. However, in the case of geographical knowledge on Northeast Asia, a horizontal power relationship was at work, relying on informal exchanges in which the materiality of maps played an important role (Spivak 2008: 212). Although the Sinocentric tradition provided the social protocols, Sinocentrism was concomitantly undermined by these exchanges. Cartifacts circulated in an intermediary zone of civility where different modes of knowledge could be literally put side by side. These knowledge vehicles were always on the move, never reaching a fixed destination. Within this process, the dynamics of knowledge exchange was shaped far less by Western science and its search for objectivity than by transcultural social interactions between peers. In this way, the examination of maps in the Leiden University Library collections challenges enables the configuration of an alternative model for knowledge exchange.

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The Use of Japanese Early Modern Maps by Western Cartographers During the Nineteenth Century

Kunitada Narumi and Shigeru Kobayashi

Abstract Because of Japan's exclusionary policies, Western maps of Japan depended on Japanese native maps from the end of the seventeenth century. They were reproduced repeatedly using Japanese vernacular maps for reference. However, Western exploratory navigations around the Japanese islands and the appearance of detailed native maps of Japan toward the end of the eighteenth century brought this practice to an end. More detailed charts, modifying new native maps on the basis of modern hydrographic data were compiled. It is well known that the maps of Tadataka Inō (1745–1818) were adopted as the source of compilations by Philip Franz von Siebold (1796–1866) and the British Hydrographical Office. Little is known, however, concerning the use of that of Sekisui Nagakubo (1717–1801), which preceded the Inō's maps. Modifying it with hydrographic data, the Russian navigator, Adam Johann von Krusenstern (1770–1846) compiled a chart entitled *Carte de l'Empire du Japon*. He incorporated thousands of place names originally transcribed by the Dutch diplomat Isaac Titsingh (1745–1812) into his chart. Titsingh had resided intermittently in Japan from 1779 to 1784 and Romanized place names in Nagakubo's map written in kanji and kana. Accordingly this chart played a leading role in the Western mapping of Japan during the mid-nineteenth century; it was adopted as the main source of the Admiralty chart of Japan printed in 1855. Although Nagakubo's map has been overshadowed by the Inō's maps, the significance of the former should be recognized as the source of the earliest detailed chart of Japan in the West.

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1 Introduction

From the last quarter of the eighteenth to the end of the nineteenth century, Western countries became increasingly interested in the hydrography of East Asia, including the Japanese coasts (Pascoe 1972; Kobayashi 2015). Western exploratory ships equipped with modern instruments, such as chronometers, approached the Japanese islands and successively surveyed their coasts. Jean-François de La Pérouse (1741–1788) navigated the western side of the Japanese islands and the northern coast of Yezo (Hokkaido) in 1787. William Robert Broughton (1762–1821) surveyed the east side of the Japanese islands and the east and west coasts of Yezo in 1796 and 1797. In 1804 and 1805, Adam Johann von Krusenstern (1770–1846) approached the southwest coast of Shikoku; the south, west, and north coasts of Kyushu; the southwest and northwest coasts of Honshu; and the west coast of Yezo. Results of their explorations were soon published, and mapmakers like Aaron Arrowsmith (1750–1823) upgraded charts of these areas based on the latest information provided by these navigators (Findlay 1851: 624–650; Dawson 1969: 20–21, 40–42; Hayes 2001: 102–106, 110–111, 125–128).

During the Tokugawa period, the shogunate (the military government of Japan) restricted contact with overseas countries and peoples to prevent the propagation of Christianity. The approach of the British, Spanish, and Portuguese ships to Japan was prohibited, and the Dutch house at Dejima in Nagasaki was established for trade. People dispatched to Japan from the Netherlands were isolated in Dejima and could not move freely. The shogunate's restrictions prevented Westerners from conducting coastal surveys and mapping the outline of the Japanese islands and Yezo. Meanwhile, early modern native Japanese maps attracted European attention. At that time, the trade through Dejima was the main route by which they could obtain Japanese maps.

It has been pointed out that the native maps of Japan printed after the end of the seventeenth century were frequently used as the source of those published in Western countries (Walter 1994a; Hubbard 2012: 282–311). The main map of the Japanese islands inserted in *The History of Japan* by Engelbert Kaempfer (1651–1716), which was translated and published in 1727 by Johann Casper Scheuchzer, is a typical example (Walter 1994b: Plates 76A, B; Hubbard 2012: 301–303). Kaempfer had stayed in Japan from 1690 to 1692 as the medical doctor attached to the Dutch trading house and, while there, he collected native maps. Scheuchzer selected one of these (Walter 1994b: Plates 72) and used it as the basis for his compendium. However, it should also be noted that Kaempfer had surveyed the road from Nagasaki to Yedo with simple instruments and compiled route maps with many place names. They were also inserted in *The History of Japan* (Walter 1994b: Plates 104A, B, C, D, E, F, G, 105).

Along with subsequent surveys of Japanese coasts, mentioned above, Westerners compiled nautical charts of this area by correcting native ones with their own data. The Admiralty chart No. 2347 titled *Japan: Nipon, Kiusiu & Sikok and part of the Korea* published in 1863 is a well-known example of this category of maps. The chart titled *Carte de l'Empire du Japon* published by Krusenstern, in his atlas of the Pacific, is another example. For the compilation of these kinds of charts, Western hydrographers were confronted with the difficulty of substituting place names in native maps written in kanji and kana with alphabetical forms. Opportunities to learn the pronunciation of words directly from natives were limited.

Since the last days of the Tokugawa regime, when the diplomatic relations between Japan and Western countries were established, Westerners enlarged the areas in which they conducted detailed, modern coastal surveys and they made many new charts (Pascoe 1972: 370–371). These new charts gradually took the place of those compiled from native maps. The Admiralty chart No. 2347, mentioned above, was frequently referred to in the first and second editions of volume IV of *The China Sea Directory* (Jarrad 1873: 160–161, 1884: 254). However, in the third edition of this series, limited mentions only are found in the section dealing with the Korean coast (Goalen 1894: 40, 136).

Reviewing the changing relationship between Japanese early modern maps and Western hydrography, the authors recognized that the process in which Westerners compiled charts by correcting native Japanese ones, based on their surveys, is beneficial in understanding the details of encounters between these cartographic traditions. In this paper, examples of this kind of cartographic interaction are scrutinized consulting Japanese and Western materials.

2 The Use of Inō Tadataka's Map by Westerners

It is well known that the map of Japan prepared by Inō Tadataka (伊能忠敬, 1745–1818; hereafter, we call his maps *Inō-zu* 伊能図) were used not only by Philipp Franz von Siebold (1796–1866) but also by the British hydrographic office, as mentioned previously. The *Inō-zu* was created by a team led by Inō Tadataka. After his death, Takahashi Kageyasu (高橋景保, 1785–1829), who was the shogunate's astronomer, completed a large coastal map (*Dai Nippon Enkai Yochi Zenzu* 大日本沿海輿地全圖) with Inō's followers in 1821. The *Inō-zu* was based on a traverse survey using a compass and measuring rope. Having been interested in the measurement of the interval of parallels, Inō observed the latitude of the survey points with a large quadrant during his travels. On the other hand, he lacked the instruments for calculating the longitude and exact projection in modern cartography. However, the *Inō-zu* was remarkable because it was the earliest map of Japan made by consistent survey methods, even if it depended on early modern skills (Hoyanagi 1967: 147–156; Unno 1994: 450–453).

Siebold, who stayed in Japan as the medical doctor attached to the Dejima Dutch trading house, made a map of Japan (*Karte vom Japanischen Reiche nach Originalkarten und astronomischen Beobachtungen der Japaner*), based on a copy of the *Inō-zu*, which he had procured in exchange for latest Western geographical books and maps. He verified the accuracy of the *Inō-zu* using his survey data, as well as the latest coastal survey data obtained by Western ships, and published it in 1840 (von Siebold 1932: 175–188; Hoyanagi 1974: 157–158). As for the transcription of place names, he mentioned that an assistant—Johann Joseph Hoffmann (1805–1878)—was helpful in his commentary. Hoffmann seems to have effectively used Japanese early modern glossaries with kana syllables printed alongside Chinese characters. It is noteworthy that Hoffmann was later appointed Professor of Chinese and Japanese at Leiden University (Kaiser 1995). Concerning this map of Japan, it should also be noted that Takahashi Kageyasu, who had provided the copy of the *Inō-zu* to Siebold, was arrested on suspicion of giving secret maps to foreigners, and died in prison in 1829.

Another case of the use of the *Inō-zu* is found in the preparation process of the Admiralty chart No. 2347, and that of No. 2875, titled '*Seto Uchi* or Inland Sea', printed in 1862. Following the Anglo-Japanese Treaty of Amity and Commerce concluded in August 1858, Rutherford Alcock (1809–1897), the first British minister to Japan, negotiated with the shogunate for permission to survey the coast, in 1861. As a result, the survey was allowed with the condition that shogunate officials be onboard the British survey ship. When Japanese officers boarded the *Actaeon*, headed by Captain John Ward, they brought a copy of the *Inō-zu*. Examining it, Captain Ward, who had already begun his coastal survey of Japan, recognized its usefulness and hoped to obtain it. Following the request to the shogunate to survey the coasts, the British Hydrographic Office received the small scale version of the *Inō-zu* (D[8428/1-3]48b) and compiled Admiralty charts 2347 printed in 1863 and 1865 (Jarrad 1873: 160–161, 216–217; Pye and Beasley 1951; Pascoe 1972: 357–358; Hoyanagi 1974: 149–156). In transcribing place names, correspondent roman letters were added for important locations in their copy of the *Inō-zu*. The majority of the place names transcribed are found near the coast. The distribution of sounded points indicated in this chart shows that the sea, where British hydrographical surveys had been conducted, were still limited.

3 The Use of Nagakubo Sekisui's Map by Westerners

Another case of Westerners' use of native Japanese maps concerns the preparation of the chart titled *Carte de l'Empire du Japon* by Krusenstern for his *Atlas de l'océan Pacifique: Hemisphère boreal* as already stated. Krusenstern adopted the map *Kaisei Nihon Yochi Rotei Zenzu* (改正日本輿地路程全圖, Revised Route Map of Japan; hereafter, *Sekisui-zu*) (Figs. 1 and 2) as its base. The *Sekisui-zu* was compiled by Nagakubo Sekisui (長久保赤水, 1717–1801), who made a career beginning as a farmer and becoming a scholar in Hitachi Province (Unno 1994: 414–415). He prepared this map of Japan not through surveying, but by compiling existing geographic information. It is believed that he used the map of Japan made by the shogunate in the middle of the seventeenth century as his source. During the Edo period, the shogunate ordered feudal lords to prepare and submit provincial maps (Kuni-ezu 国絵図). Then, the shogunate made a map of the Japanese islands

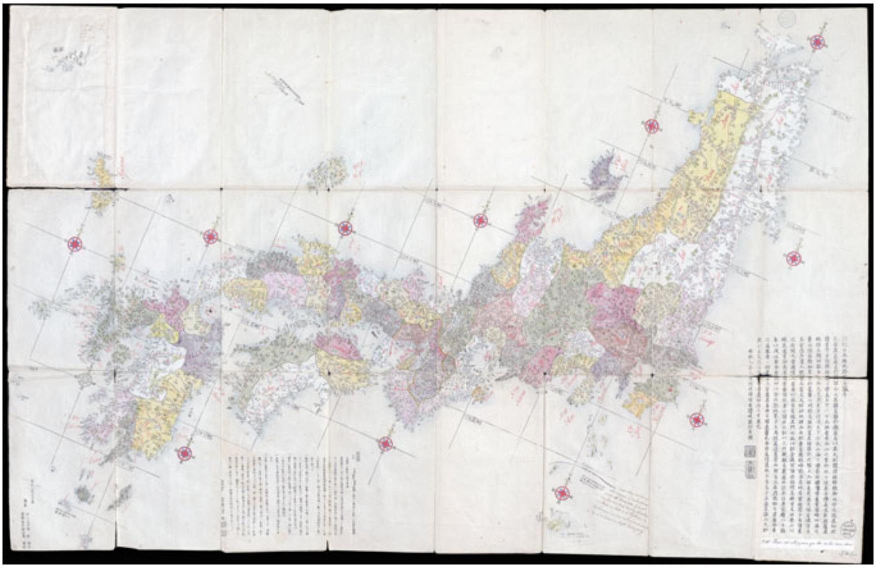

Fig. 1 *Kaisei Nihon Yochi Rotei Zenzu* (Leiden University Library, Ser. 220a)

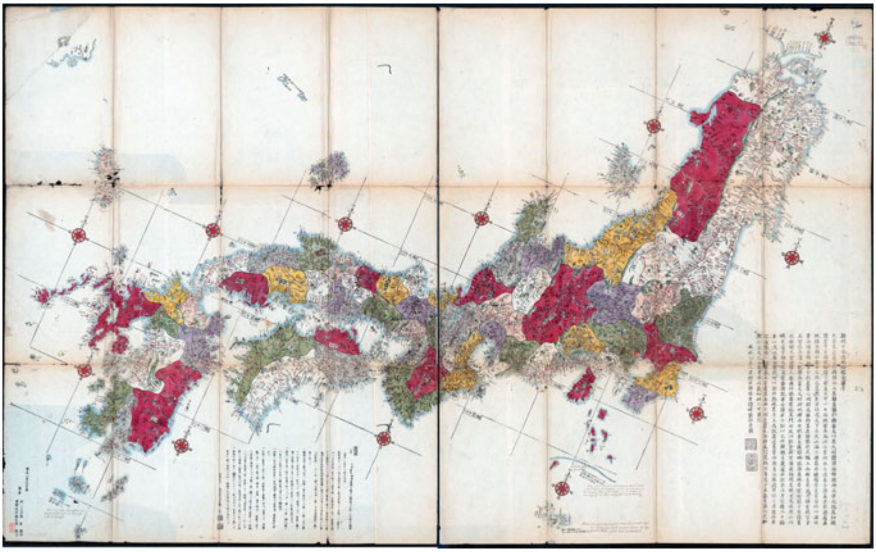

Fig. 2 *Kaisei Nihon Yochi Rotei Zenzu* (Library of Congress, LCCN: 77694708)

by connecting them. After that, copies of this official map seem to have circulated among scholars (Kawamura 2013: 200–244).

The *Sekisui-zu* is the term which designates a group of detailed woodblock-print maps of Japan created by Nagakubo Sekisui. Maps in this group became popular since their first publication, because of its new realistic style, which outperformed stereotyped obsolete ones, and many revised editions and imitations were subsequently published. Unno (1994: 414–415) ranked the *Sekisui-zu* as the most widely accepted map of Japan during the late Tokugawa period. Siebold was interested in the *Sekisui-zu* and inserted it in his book *Nippon* (von Siebold 1975: T31–34). He valued it as detailed data of place names because more than 4500 names had been entered into it (von Siebold 1932: 253–254).

Most of the copies of the *Sekisui-zu* were colored by hand. However, simple prints without coloring were sold as a cheaper product. Also, the colouring was not always conducted in the same manner (Figs. 1 and 2). In consequence, the variation of the *Sekisui-zu* seems to be infinite. Chronologically, copies of the *Sekisui-zu* have been classified according to the publication years printed in every copy (1779 [The 8th year of *An'ei*], 1791 [The 3rd year of Kansei], 1811 [The 8th year of Bunka], 1833 [The 4th year of Tenpō] and 1840 [The 11th year of Tenpō]) (Baba 2001). However, two conspicuous variations have been pointed out even among copies published in 1879 (hereafter *An'ei* edition) (Unno 2005: 513–516). One is the change of the coastline of Shimokita peninsula from pen tip type to axe type. The other is the increase in the number of place names of Mutsu province (Fig. 3). Recent study has revealed that among copies of the *An'ei* edition, many small modifications concerning topographical descriptions, place names, and coloring were recognized in addition to the large changes described above (Kaida 2017). Accordingly, it is presumed that Nagakubo Sekisui had repeated modifications during his lifetime.

4 Krusenstern's Voyage

In August 1803, Russian exploratory ships led by Krusenstern set sail from Kronstadt (von Krusenstern 1813: v. I, 210–313, v. II, 1–43). They travelled around the southern tip of South America, then crossed the Pacific and docked in Petropavlovsk, the Russian port of Kamchatka. In September 1804, they reached the southwestern coastal area of Shikoku, Japan. After that, they sailed around the southern coast of Kyushu and entered Nagasaki in October. Although they anchored there for half a year, the negotiations with the shogunate concerning the opening of diplomatic relations and trade did not achieve any results. In April of the following year, they departed from Nagasaki and went north toward the Oki Islands through the Tsushima Strait. Subsequently, they sailed northward, away from Honshu, and approached the Oga Peninsula on the northern part of west coast of Honshu at latitude 40 degrees in May. From there, they took a more northward course, confirming the Tsugaru Straits, and went farther north along the west coast of Yezo.

Fig. 3 A comparison of the delineation around the Shimokita Peninsula; (Left) *Kaisei Nihon Yochi Rotei Zenzu* (Leiden University Library, Ser. 220a); (Right) *Kaisei Nihon Yochi Rotei Zenzu* (Library of Congress, LCCN: 77694708)

To determine the correct position of the Japanese islands, Krusenstern surveyed by consulting earlier Japanese charts. He paid attention to the periphery of the Japanese islands as well as coasts, which had not been surveyed by Westerners (von Krusenstern 1813: v. I, 1–19). At that time, the latest survey data on the Japanese islands was the chart of La Pérouse (1787) and that by Arrowsmith, published in an atlas titled *South Sea Pilot* (1798) (von Krusenstern 1813: v. I, 222–223, v. II, 14–16). As Broughton's reports had not been published at the time of their departure, they used Arrowsmith's chart to confirm his survey results. Besides, Krusenstern often referred to Kaempfer's map of Japan (von Krusenstern 1813: v. I, 298).

Krusenstern's chart significantly corrected the longitude and latitude of the position of the Japanese islands. Further, 'Likeo' island, which had been drawn near the south of Kyushu, was removed based on actual survey data and the narrative of natives in Nagasaki (von Krusenstern 1813: v. I, 225). Further, the position and width of the Tsugaru Straits between Honshu and Yezo were corrected. Krusenstern reduced the width of the Tsugaru Strait from more than 100 miles to about 9 miles (von Krusenstern 1813: v. II, 28).

5 Carte de l'Empire du Japon

Krusenstern's *Atlas de l'océan Pacifique,* in which the *Carte de l'Empire du Japon* based on the *Sekisui-zu* (Krusenstern 1827–1838, hereafter, Krusenstern's chart) (Fig. 4) was inserted, has been considered to have been published in 1827, according to the year printed on the cover. However, some of the charts included in this atlas suggest that they were revised until 1835, and its final publication date seems to have been later.

The copy of *Sekisui-zu,* used by Krusenstern as his source, was presented to him by the Grand Duke of Weimar in 1818 (von Krusenstern 1827: 120–131, 136–138). The dedication to him ("Son Altesse Royale le Grand-Duc de Weymar") below the title of *Carte de l'Empire du Japon* express Krusenstern's gratitude. This copy was the newer version of the *An'ei* edition, judging from its axe-shaped Shimokita peninsula and increased number of place names of Mutsu province.

Krusenstern examined it from a cartographic point of view (1827: 136–138). The *Sekisui-zu* is remarkable because of its grid lines covering the Japanese islands. Comparing this copy with survey data at that time, Krusenstern concluded that the east-west lines of the grid with numerical value of angles were parallels, although he found some errors. On the other hand, he found that the north-south lines of the grid without notes on scale were drawn at the same interval of the parallels and estimated this interval was 15 minutes larger than the actual 1 degree of longitude. Some Japanese researchers have argued that these north-south lines are closely akin to meridians. However, we think that this grid seems to have been rooted in the representation method of traditional Chinese cartography (Lee 1994: 124–126), since the length of all intervals of lines is identical.

Compiling *Carte de l'Empire du Japon*, he modified the position and shape of the lands based on his survey data (von Krusenstern 1827: 139–188). For example, the latitudes of Tsushima, and Oki were largely corrected. He also changed the position of the southern tip of Bōsō Peninsula on the basis of its latitude recorded in Broughton's survey data.

Additionally, Krusenstern scrutinized the other copies of the *Sekisui-zu* available in Russia (von Krusenstern 1827: 138–140; Nakamura 1968). Adam Kirillovich Laxman (1766–1806), who visited Japan as Russian envoy from 1793 to 1794, brought a copy of the *Sekisui-zu* and donated it to the Academy of Sciences in St. Petersburg in 1794. According to von Krusenstern (1827: 131), this copy was identical to that presented by the Grand Duke of Weimar. However, this was lost after his scrutiny. The Russian Admiralty also had a copy of the *Sekisui-zu*. von Krusenstern (1827: 138–139) pointed out that it was slightly different from that presented by the Grand Duke of Weimar. Besides, a Russian version of the *Sekisui-zu* was printed, translating this map in 1809. This work was carried out by two former castaways from Japan, who had been working as teachers at the school of Japanese language established at Irkutsk. Krusenstern evaluated the transcription of place names of this Russian version incomplete, comparing two names of important towns as examples with those of another source discussed in detail below, and assumed that the students at this school in Irkutsk might have translated it (von Krusenstern 1827: 131–136; Nakamura 1968).

Fig. 4 *Carte de l'Empire du Japon* in *Atlas de l'océan Pacifique: Hemisphère boreal* (Library of Congress, LCCN: 13023150)

Copies of the *Sekisui-zu* were already brought to Europe through the Dejima route before 1800. Isaac Titsingh (1745–1812), born in Amsterdam, visited Japan three times between 1779 and 1784 as the 'Opperhoofd' (chief factor) at Dejima, and collected various Japanese materials. The copies of *Sekisui-zu* were also included in his collection (Rémusat 1817, 1822; von Siebold 1932: 76–77; Lequin 2003: 89–90). In 1811, he submitted a draft of 'Description on Japan' (*Beschryving van Japan*) to the Royal Academy of Sciences of the Netherlands, and attached a list of place names found in the *Sekisui-zu* (Matsui 2005). The number of place names written in Dutch spelling in the list amounts to 4254. Currently, this list is found at the National Library of the Netherlands (KW KA 147c), and the copy of *Sekisui-zu* corresponding to it, in which ordinal numbers by province were put down for each place name, is stored at the Leiden University Library (Ser. 220a) (Matsui and Lequin 2009: 4–7) (Fig. 1). This copy can be classified to be an earlier *An'ei* edition according to its depiction of the Shimokita peninsula as the pen tip type. A small number of alphabetical place names written around Nagasaki are also in Dutch spelling. On the label affixed to this copy, is written that this map came into the hands of the Orientalist Julius Heinrich Klaproth (1783–1835) for a time. However, it was later procured by Siebold and finally added to his collection (Matsui and Lequin 2009).

Titsingh created another place name list of the *Sekisui-zu* which also came into the possession of Klaproth. However, it is now in the repository of the British Library and titled *Geography of Japan* (a list of places in Japan, ADD 18098). Place names and comments on them were also written in Dutch. Judging from the number of them written in the list (altogether 4526), it seems to correspond to a copy of the *Sekisui-zu* of the later *An'ei* edition. It attracted our attention that the ordinal numbers written in a copy of the *Sekisui-zu* at the National Library of France corresponded exactly with those in the list at the British Library. Thus, according to its axe shaped Shimokita peninsula, this is classified as a later *An'ei* edition. Judging from these correspondences, this copy is likely paired with the place name list in the British Library. These two sets of lists and maps prepared by Titsingh suggest that he had distinguished major variations among *An'ei* editions of the *Sekisui-zu*.

According to von Krusenstern (1827: 131–132), Klaproth sent a French translation of the *Sekisui-zu* to the maps depot of the General Staff (St. Petersburg) in 1820. He also pointed out that its original drawings were identical to the copy of the *Sekisui-zu* presented by the Grand Duke of Weimar, and evaluated this French version as far better than the Russian version mentioned above, because Klaproth referred to works of Kaempfer and Thunberg based on his study of Asian languages. Accordingly he adopted this French version of place names for his chart. Klaproth might have made a French version of place names according to Titsingh's list (Titsingh 1998), which is presently at the British Library. Krusenstern consequently adopted this French version as the transcription of place names for his chart of Japan.

In October 1855, the British Hydrographic Office published chart No. 2347 based on Krusenstern's chart described above. However, the office modified this chart according to its own survey results. In particular, the coastline

Fig. 5 A supplementary delineation of the coast according to the survey by John Richards around Sado. Chart no. 2347 (1855) (Library of Congress)

near Niigata was drawn in parallel with the coastline drawn in Krusenstern's chart, according to the survey results by John Richards in the summer of 1855 (Pascoe 1972: 356) (Fig. 5).

6 Conclusion

In this paper, we have reviewed the use of native Japanese maps by Westerners during the eighteenth and nineteenth century. In the early stage, vernacular maps purchasable for common people were available and only the names of provinces and towns located along the route from Nagasaki to Yedo written in them were transcribed into alphabets. Thereafter this kind of map making continued up to the end of the eighteenth century (Hubbard 2012: 282–391).

From the late eighteenth century, Westerners recognized the *Sekisui-zu*, which had been just published, as a map of Japan which was far more detailed than previous ones and less objectionable from a cartographic point of view. As a matter of course, Westerners came across the *Sekisui-zu*, because it was also purchasable at book shops in Japan (von Siebold 1932: 180). Accordingly, it is not strange that the copy, which Grand Duke of Weimar presented to Krusenstern, was brought to Europe and sold in Amsterdam (von Siebold 1932: 157, note 44).

Titsingh's effort at transcribing place names of the *Sekisui-zu* was an attempt to present the geography of Japan in greater detail, while Krusenstern tried to integrate spatially scattered hydrological data with it to discern the outline of the Japanese islands and finally make the best use of Titsingh's work. However, Titsingh's work was not brought directly to Krusenstern. Moreover, for Krusenstern it was impossible to know the maker of the list of transcribed place names of Japan. Accordingly, we cannot find Titsingh's name in his commentary of *Atlas de l'océan Pacifique* (von Krusenstern 1827: 129–188). For the transmission of Titsingh's valuable contribution, the network of European Orientalists barely played a small role.

In contrast to the *Sekisui-zu*, the *Inō-zu* was an official map of the shogunate. Siebold procured its manuscript copy in 1826 from Takahashi Kageyasu in exchange for Western geographical books and maps, such as the Krusenstern's record of circumnavigation (Akiduki 1999: 308–316). Takahashi, who had been interested in the geography of north-east Asia, desired to have the latest information of the areas these maps concerned.

Along with the opening of Japan, the survey of Japanese coasts became an important issue between Japan and Western countries (Beasley 2000; Kobayashi 2015). Although the shogunate had obstinately refused coastal surveys by Western ships, it gradually changed this policy and agreed to the request of the British minister, Rutherford Alcock, about the offer of the *Inō-zu*. It is noteworthy that the *Inō-zu*, which had been treated as a secret map since its completion in 1821, was finally published in 1867. This is far later than Siebold's *Karte vom Japanischen Reiche* (1840) and also the Admiralty Chart No. 2347 (1863) and 2875 (1862) based on it.

In spite of the different channel of acquisition of Japanese native maps by Westerners, maps and charts published in Europe based on these have a common feature: they did not mention the name of cartographers of original maps, even if it was printed clearly on the surface as the *Sekisui-zu*. The difficulty to know the pronunciation of personal names written in kanji for Westerners was obviously one of the causes of this omission. However considering the title *Karte vom Japanischen Reiche nach Originalkarten und astronomischen Beobachtungen der Japaner* (Siebold's map of Japan 1840) and the annotation underneath, "Japan is compiled from a Japanese Government Map, adapted to Positions determined by Mr. Richards, 1855, and Commander Ward, 1861" (British Admiralty chart No. 2347 printed in 1863), it is obvious that early modern Japanese cartographers were not recognized as persons with individuality by Western cartographers. The utilization of Japanese early modern maps by Western cartographers was carried out at spatially and socially remote places.

Additionally, we would like to emphasize that the *Sekisui-zu* played a major role in creating a map of Japan in Europe during the mid-nineteenth century, although it has been overshadowed by the *Inō-zu*. The acceptance process for the *Sekisui-zu* in Europe is a noteworthy case of cultural exchange between modern cartography in Europe and early modern cartography in Japan.

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Re-locating the 'Middle Kingdom': A Seventeenth-Century Chinese Adaptation of Matteo Ricci's World Map

Gang Song

Abstract The present study centers on a largely unnoticed seventeenth century Chinese map entitled *Tianxia jiubian fenye renji lucheng quantu* 天下九邊分野人跡路程全圖 (Complete Map of the Allotted Fields, Human Traces, and Routes within and without the Nine Borders under Heaven, 1644). Printed by a lesser-known scholar Cao Junyi 曹君義, this map carried remarkable features that mixed a number of concepts and techniques from both Chinese and European cartographic traditions. It borrowed some information, including the oval layout, lines of longitude, and names of foreign places, from a few widely circulated Jesuit world maps, especially the one made by Matteo Ricci in 1602. Meanwhile, the map continued to represent a Sinocentric world order and the stereotyped concept of Chinese-Barbarian distinction. While the 'Middle Kingdom' remains at the center and occupies the largest area, regions such as Europe, Africa, and America are reduced disproportionally in size and put near the borders of China. By converging two very different cartographic traditions, Cao made a conscious effort to re-locate China in the newly known greater world. In-depth analysis of this particular map suggests that the seventeenth century encounter of Chinese and European cartographies should not be treated with a simplistic characterization of acceptance versus resistance, or, advancement versus backwardness. It was instead a complex process of negotiation and appropriation conditioned by various factors across scientific, ideological, cultural, and religious boundaries.

1 Introduction

In the cultural encounter of China and Europe during the seventeen century, world maps were used by Catholic missionaries and Confucian scholars as an important medium to represent different worldviews and cultural beliefs. The shape of the earth and China's location in the world, in particular, have been two frequently

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debated subjects when the Italian Jesuit Matteo Ricci (1552–1610) challenged the Sinocentric world order with his Western-style world map *Kunyu wanguo quantu* 坤輿萬國全圖 (Complete Map of Ten Thousand Countries of the World, 1602). In the face of the Jesuit challenge, Chinese scholars developed multilayered views and responses, many of which went beyond the 'scientific' inquiries of geographic and cartographic knowledge. A paradoxical self-other identity complex was clearly visible in such cross-cultural exchanges.

In recent decades, scholars have paid much attention to Western-style world maps made by Ricci and other Jesuit missionaries, as well as their challenges to traditional Chinese astronomy and mapmaking. Many take a give-and-receive approach, i.e., the world maps were 'given' by the Jesuits and 'received' by the Chinese viewers. The 'reception' on the Chinese side is therefore considered evidence of success or failure of the Catholic missions in China (Standaert 2002: 6–12). However, no matter acceptance, curiosity, suspicion, or rejection, Chinese reactions have also played a special role in this cultural encounter. The Jesuits by referring to influential Chinese maps and geographic works acquired useful knowledge on China's territories, and in line with their mission strategy they found ways to revise European world maps to accommodate the established Chinese ideas. In this sense, the Jesuits should be the ones who first 'received' Chinese knowledge before 'giving' their Western knowledge to the Chinese. More importantly, the Chinese reactions suggested a great diversity which cannot be summarized into two dualistic categories of acceptance or rejection, especially for those maps that mixed Chinese and Western components. Hence, the give-and-receive approach often results in simplistic or even misleading judgments. A popular assumption is that the cartographic exchanges in the seventeenth-century formed a 'scientific', linear and progressive development, featured by the new Western 'advanced' cartography winning over the old Chinese 'backward' cartography. If we look carefully at the examples, however, we will see a process of dynamic exchanges and negotiations in mapmaking among different cultural groups with various concerns, interests, and purposes.

To better understand such a complex encounter, this article presents a case study on a seventeenth century Chinese map entitled *Tianxia jiubian fenye renji lucheng quantu* 天下九邊分野人跡路程全圖 (Complete Map of the Allotted Fields, Human Traces, and Routes within and without the Nine Borders under Heaven, 1644). Printed by a lesser-known scholar Cao Junyi 曹君義 (dates unknown) at the end of the Ming Dynasty (1368–1644), this map carried remarkable in-between or hybrid features that mixed a number of concepts and techniques from both Chinese and European cartographic traditions. On the one hand, its adoption of the oval layout, lines of longitude, and names of foreign places appear to have been borrowed from a few widely circulated Jesuit world maps, especially the one made by Matteo Ricci in 1602. On the other hand, Cao's depiction of China suggests a stereotyped Sinocentric mindset and the continuous use of the *Hua-Yi* 華夷 (Chinese-Barbarian) distinction in traditional Chinese mapmaking. While the 'Middle Kingdom' remains at the center and occupies the largest area, regions such as Europe, Africa, and America are reduced disproportionally in size and put near the borders of China. As it turns out, this particular map uncovers a conscious effort to fuse two very different cartographic traditions and re-locate China in the newly known greater world.

Except for some descriptive illustrations and brief discussions (Chen 1994b: 56; Hu 2000: 186–188; Smith 2013: 67–69; Nie 2014: 12), little substantial research has been done on Cao's map. Many scholars recognize its hybrid representation, but due to limited access to the map they cannot understand and further explain how Cao managed to accomplish such a hybrid representation, what similarities and differences may be found when comparing Cao's map with the other maps of the time, and what kind of role this map has played in the cartographic exchanges between China and Europe during the seventeenth century. This article presents an in-depth study addressing these key issues.

In the following parts, I will first trace and identify a Chinese source map that Cao may have possibly adopted. Then, I will give a brief survey of Western-style world maps made by Matteo Ricci and other Jesuits in China, and explore how Cao selectively appropriated certain elements of the Jesuits' maps to present a kind of new, yet largely distorted, cartographic knowledge from Europe. This is to be followed by analysis of the connections between Cao's map and some traditional *Hua-Yi* maps. They testify Cao's adherence to the stereotyped Sinocentric mindset. The last part is a comparison of Cao's map with contemporary Chinese reproductions and adaptations of the Jesuit world maps, by which I will highlight the unique hybrid form in Cao's map fusing Chinese and European cartographic traditions (Fig. 1).

2 A Possible Direct Source: Liang Zhou's 1593 Map

In his preface to the map, Cao Junyi refers to two Chinese geographical works. One is *Shanhai jing* 山海經 (Classic of Mountains and Seas), one of the earliest illustrated Chinese works on foreign places. The other is *Daming yitong zhi* 大明一統志 (Records of the Unified Great Ming, 1461), the widely circulated official geography during the Ming period. These two works constitute the main sources of information not only for Cao's preface but also for his lists of military forts and foreign states on both sides of the map, as well as a block of detailed textual illustrations on the two capitals and thirteen provinces at the bottom. However, *Shanhai jing* does not contain any map, while the general map in *Daming yitong zhi* looks different from Cao's map. Therefore, it seems unlikely that Cao used only these two geographical works when making his embellished world map.

A recent study (Guan 2014: 105) suggests that Cao modeled his map after *Gujin xingsheng zhi tu* 古今形勝之圖 (Map of China, Past and Present) printed by Yu Shi 喻時 (1506–1571) in 1555. After a detailed comparison, I would argue that Cao more likely used another map as his model—*Qiankun wanguo quantu gujin renwu shiji* 乾坤萬國全圖古今人物事蹟 (Complete Map of the Ten Thousand Countries

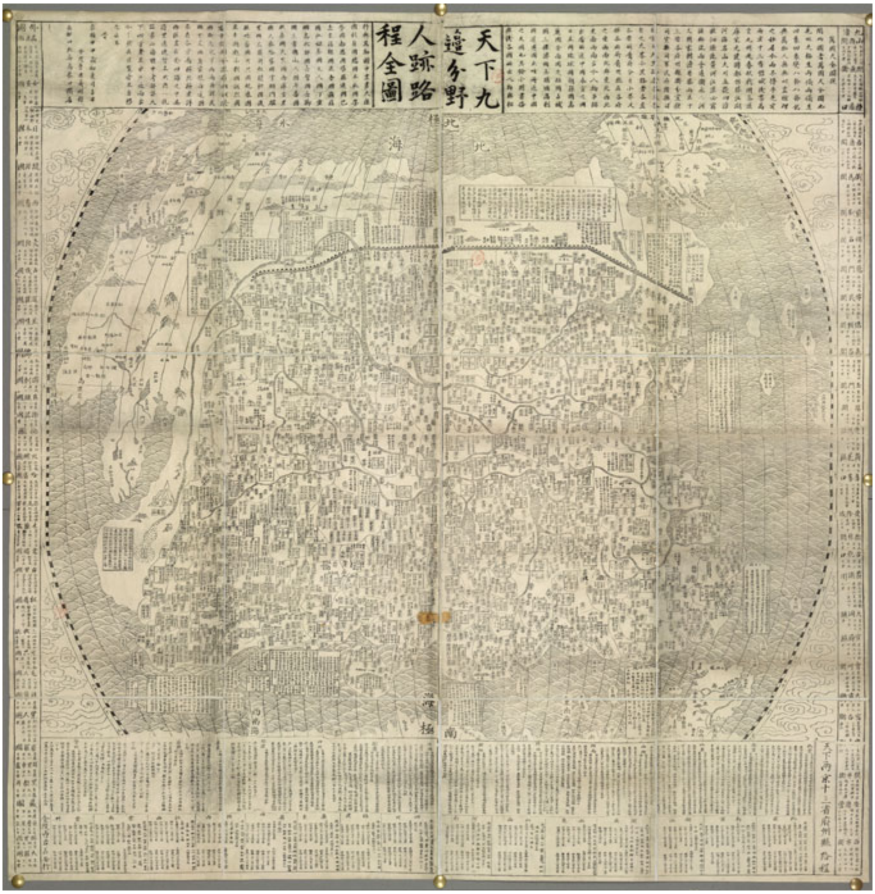

Fig. 1 Cao Junyi 曹君義, *Tianxia jiubian fenye renji lucheng quantu* 天下九邊分野人跡路程全圖 (Complete map of the Allotted Fields, Human Traces, and Routes within and without the Nine Borders under Heaven, 1644), Courtesy of the British Library, London

in the Universe and the Figures and Records from Past to Present), printed by Liang Zhou 梁輈 (dates unknown) in 1593 (Cao 1989: Plate 145). There are many striking similarities between Liang's map and Cao's map, including major rivers and lakes, coastlines, the Great Wall, famous mountains, administrative borders, as well as assorted legends and symbols.

First, one should notice the almost identical depictions of the river systems on these two maps. The Yellow River starts at the *Xingxiu hai* 星宿海, or the Constellation Sea, which is located at the lower left corner in both maps. The upper reach of the river then heads northwards straightly. At the Hetao 河套 area (the Great Bend of the Yellow River) in its northernmost part, the river bends towards the south, and then turns east towards the Mount Hua 華. It finally merges into the East China Sea to the south of the Shandong Peninsula. Many earlier Chinese mapmakers had more or less followed a similar pattern in drawing the course of the Yellow River, but the contours of the river on Cao's map and its branches reflect a striking resemblance to the depiction of the river on Liang's map. The Yangtze River reveals another similarity. The northern branches of its upper reaches show almost identical contours. The southern branches of its lower reaches are connected with three large lakes—Lake Dongting 洞庭, Lake Poyang 鄱陽, and Lake Tai 太. The locations and shapes of the lakes seem to coincide perfectly with each other on these two maps.

China's coastlines on these two maps also have many similarities. Both maps show the coastlines in a squared shape. Many maps from the Ming period either missed China's northern coastline or depicted big curves along the coastline of southern China. It is worth attention that Liang's map and Cao's map have a protruding corner along China's southeastern coastline. Some maps made in the late Ming and early Qing periods represented a similar corner-shaped coastline, e.g., *Tiandi tu* 天地圖 (Atlas of Heaven and Earth) and *Daming yitong shanhe tu* 大明一統山河圖 (Atlas of Mountains and Seas of the United Great Ming Dynasty), but Cao's map appears to more closely resemble Liang's map.

The Great Wall is a key landmark on these two maps. It is rendered horizontally with a smooth curve that bends northward, showing its important function in military defense. The Great Wall was rebuilt and extended during the mid-Ming period (1470s–1570s) as the major border separating the Chinese from the Mongols. The latter, once having conquered and ruled over China for about a century, had been seen as a dangerous threat in the eyes of the Ming emperors (Mote and Twitchett 1988: 390, 397–402). The Great Wall appeared on many seventeenth-century maps, including on Jesuit world maps, but seldom did other mapmakers depict a smooth, horizontal curve of the Great Wall like Liang and Cao did on their maps. They further used a similar pattern of triple lines—either dotted or solid—to represent the Great Wall.

In addition, famous mountains are located in an almost identical manner on these two maps. They include Mount Tai 泰, Mount Heng 衡, Mount Hua 華, and Mount Heng 恆. Mount Kunlun 崑崙, traditionally considered a mysterious and paradise-like place, is located nearby *Xingxiu hai* 星宿海, the origin of the Yellow River.

If one looks carefully at the administrative borders and legends of various places, one will notice some striking resemblances as well. Some important places are located at the same sites. By using the river systems as referential coordinates, it is not difficult to find the identical sites of the two capital cities, *Shuntian fu* 順天府 (Beijing) and *Yingtian fu* 應天府 (Nanjing). The former sits by the side of Luan 灤 River flowing southward, while the latter sits nearby the intersection of the Yangtze River and the Grand Canal. For both capitals, Liang and Cao use a double-lined square frame. The same legend is also used for all the thirteen provinces on both maps. They use smaller squared frames to represent the names of prefectures (*fu* 府 or *zhou* 州), while counties (*xian* 縣) and other administrative units are mainly indicated by small oblong frames. As for those forts along China's northern and

Western borders, the names are given in small rhombus-shaped frames. Moreover, though the administrative borders are not exactly identical in some parts, the majority of places on these maps resemble the detailed delineations of prefecture-level borders.

The evidence above shows an unusually high degree of similarity between Liang's map and Cao's map. Meanwhile, one may take another approach by excluding other maps that may possibly have served as a direct model for Cao's map. First, there is *Guangyu tu* 廣輿圖 (Enlargement of the Terrestrial Map), compiled by Luo Hongxian 羅洪先 (1504–1564) in 1541 and printed in 1555. This atlas had great impact on the maps of later generations, so it might be possible that both Liang and Cao referred to the same source. Liang did mention Luo's *Guang Yutu* in the preface to his map, but claims that *Guang Yutu* was insufficient in that it "lists one thing but omits ten thousand [other things]." A comparison of the river systems in Liang's map and the general map included in Luo's atlas shows a few major differences. The upper reach of the Yellow River on Liang's map is drawn with an almost vertical route from south to north, while the same part of the river on Luo's map is depicted leaning towards the northeast. Apparently, the delineation of the Yellow River on Cao's map follows that on Liang's map instead of that on Luo's *Guang Yutu*.

On Luo's *Guang Yutu*, one may also notice a major landmark that differs from both Liang's and Cao's maps. Luo uses the symbol of a long black-colored stripe across the northern part of China to indicate the desert area. The same desert area, however, is greatly reduced in size and length on Liang's map. Interestingly, in Cao's map there is also a small stripe of desert at the same location.

Moreover, Luo's *Guang Yutu* adopts the method of *jili huafang* 計里畫方 (i.e., drawing rectangular grids based on calculated distances), which had been invented by the well-known cartographer Pei Xiu 裴秀 (224–271). In his general map of China, the whole area is covered by a network of parallel lines, or a rectangular grid, for which Luo explains that "each rectangular grid represents 500 *li*." The method is not used on both Liang's map and Cao's map. As Luo draws more detailed regional maps separately in his atlas, he only provides the names of prefectures while omitting smaller administrative units on his general map. In contrast, both Liang and Cao present only a single-sheet map, so they put all administrative units, large or small, on the same map.

Another possible source could be Yu Shi's *Gujin xingsheng zhi tu*. The layout of Yu's map looks similar to that of Liang's map. It could be possible that Liang had used Yu's map, even though he does not mention Yu's work in his preface. The contours of the coastlines, the convex curve of the Great Wall across northern China, the lines showing the administrative borders, as well as the use of legends (e.g., square frames for place names and graphic symbols for mountains), suggests a number of similarities between the two maps.

However, the river systems and lakes on these two maps do not match. Yu depicts the upper reaches of the Yellow River much shorter in length. The branches of the upper reach of the Yangtze River on Yu's map are not depicted in detail as seen on Liang's map. The major lakes, including the aforementioned Lake

Dongting and Lake Poyang, are visibly different in shape, while Lake Tai is missing on Yu's map. As far as the legends are concerned, Yu depicts the main courses of the Yellow River with a thick, solid red line, and the main courses of the Yangtze River with double or triple lines. On both Liang's and Cao's maps, the courses of the two rivers are drawn with similar double lines and filled up with wave patterns. Moreover, Yu uses relief scripts for contemporary place names and intaglio scripts for ancient place names, while both Liang and Cao use only relief scripts for all past and present place names. In this respect, it seems that Cao more likely took Liang's map, but not Yu's map, as a direct model.

In fact, Chinese mapmakers in the seventeenth century did not develop a system of standardized methods. They shared certain longstanding concepts, including the *Hua-Yi* distinction, but they often adopted different forms and methods for different purposes in mapmaking. In this light, the resemblances between Liang's map and Cao's maps in the general layout, key landmarks, and even small details are convincing enough to assume that Cao closely followed the example of Liang's map, or at least a later copy of it.

Little background information is known about Liang Zhou and Cao Junyi, and no solid evidence in historical records has been found connecting the two mapmakers. At the end of his preface, Liang indicates his official position as a *Ruxue xundao* 儒學訓導, i.e., a Confucian Instructor, in Wuxi 無錫 County, Changzhou 常州 Prefecture. He calls himself *siren* 泗人, which likely refers to his hometown in Shangdong Province. As for Cao, who came from Jinling 金陵 (i.e., Nanjing), was possibly a bookstore owner or a publisher. The texts in the prefaces of both maps suggest that Liang and Cao were Confucian scholars, maybe not from the elite class but with good knowledge of the Confucian classics.

Since Wuxi County is close to the capital city of Nanjing, Liang and Cao could be active in the same Jiangnan region, a culturally and economically advanced area since the Song Dynasty. Liang's map was printed by a branch office of the Ministry of Personnel at Nanjing. This suggests a kind of official and authoritative status of his map. Hence, it is possible that Cao had the chance to collect Liang's map that had been circulated in the area for some time.

Despite scarce information about a possible direct connection between the two maps, one can still be impressed with Cao's special representation of the world. He went beyond a simple duplication of any available Chinese model, Liang's map included, and made conscious efforts to re-locate China at the center of an enlarged world. His map reflected the emergence of a new trend among Chinese mapmakers during the seventeenth century, largely due to the challenges of the Jesuit missionaries who brought European-style world maps to China.

3 The Jesuit World Maps: Challenges and Adaptations

In the preface of his 1593 map, Liang Zhou mentions that he has seen an early edition of Matteo Ricci's world map: "Recently I saw the world map and illustration of Master *Xitai* 西泰 (Chinese courtesy name of Ricci), the (original) print of the European map, and six reproductions made by scholars from Nanjing. Then I came to know the vastness of *Qiankun* 乾坤 (i.e., universe)." (Huang and Gong 2004: 26–28). This reference indicates that Ricci's map has already attracted the attention of Chinese scholars in the early years. The European-style map provided abundant new information about the world outside of China, and it was soon circulated by way of more Chinese reproductions (Gallagher 1953: 326, 331). Like Liang Zhou, Cao Junyi might also have direct or indirect connections with the Jesuits in the Jiangnan region, and therefore he was able to gain access to European cartographic knowledge through their world maps.

Before one can understand how Cao adapted to the Jesuit world maps, one should be clear about the reasons why the Jesuits strategically used maps to serve a missionary cause. Over the sixteenth century, European cartography had undergone a transition of world mapping due to a series of geographical discoveries. Sailors and merchants, with new information from circumnavigations, had progressed far beyond the medieval representations of the world. The T-O pattern based on Christian theology had once been one of the dominant styles in mapping the world (Bagrow 1985: 42). However, a more refined pattern appeared in early sixteenth century world maps, mostly produced by Italian and Dutch cartographers. Under the influences of Gerard Mercator (1512–1594) and Abraham Ortelius (1527–1598), the oval projection became popular among European cartographers. As a leading force in the Roman Catholic Church's Counter-Reformation movement, the Jesuits were well-trained in theology, sciences, and humanities. Ricci, for example, was a student of Christoph Clavius (1538–1612), a well-known Jesuit mathematician and astronomer who proposed the Gregorian calendar (Hsia 2010: 14–16). When he started his overseas voyage to the East, Ricci brought with him not only the world maps of Ortelius but also his teacher's works. This provided a solid foundation for him to introduce a new European model of the world to China and further challenge conventional Chinese knowledge of the world.

As one of the pioneering Jesuits in the China mission, Ricci was among the first who showed a European world map to the Chinese (Fang 1966: 77–84; Spence 1983: 49). The presentation created a shocking experience to those who firmly believed that China contained almost the whole world and that there could not possibly be other equivalent civilizations outside of China. According to Ricci's observation,

> Of all the great nations, the Chinese have had the least commerce, indeed, one might say that they have had practically no contact whatever, with outside nations, and consequently they are grossly ignorant of what the world in general is like. True, the had charts somewhat similar to this one [i.e., the world map hanging on the wall of the mission house in Zhaoqing], that were supposed to represent the whole world, but their universe was limited

> to their own fifteen provinces, and in the sea painted around it they had placed a few little islands to which they gave the names of different kingdoms they had heard of. All of these islands put together would not be as large as the smallest of the Chinese provinces. With such a limited knowledge, it is evident why they boasted of their kingdom as being the whole world, and why they called it Thienhia [i.e., *Tianxia*], meaning, everything under the heavens. When they learned that China was only a part of the great east, they considered such an idea, so unlike their own, to be something utterly impossible, and they wanted to be able to read about it, in order to form a better judgement. … When they first saw our delineation of the universe, some of the uneducated laughed at it and made fun of it, but it was different with the better instructed, especially when they studied the placement of the parallels and meridians and of the equator, relative to the tropics of Cancer and of Capricorn. Again, when they learned of the symmetry of the five zones, and after reading of the customs of so many different people, and seeing the names of many places in the perfect accord with those given by their own ancient writers, they admitted that the chart really did represent the size and figure of the world (Gallagher 1953: 166–167).

Ricci told the Chinese audience that China was only part of the earth and that there were several large continents, including Asia, which were surrounded by oceans and seas. China was neither the whole world nor the center of the world, mainly due to the round shape of the earth and the existence of other civilizations shown on his world map.

Over two decades of his China mission, Ricci made at least five editions (1584 Zhaoqing edition, 1596 Nanchang edition, 1600 Nanjing edition, and two Beijing editions in 1602 and 1603) of his world map (Huang and Gong 2004: 3–36). These maps introduced major models of European cartography, and they were widely circulated at that time side by side with numerous Chinese reproductions. By making these maps, Ricci and his fellow Jesuits intended to achieve a twofold purpose. On the one hand, they wanted to use the maps as a type of exotic object from the Far West to garner the curiosity of Chinese people, thus paving the way for further introduction of the Christian doctrines. On the other hand, equipped with this type of scientific knowledge, they would claim the identity of Western scholars, as a counterpart of Chinese scholars, to facilitate their introduction of *Tianxue* 天學, or the Learning from Heaven. This was an important aspect of their mission strategy in China (Peterson 1998: 789–839).

By presenting his world maps, especially the last two refined Beijing editions, Ricci challenged several major aspects of the Chinese conception of the world. First of all, he introduced the idea of the spherical shape of the earth, as he wrote in the preface to the 1602 edition *Kunyu wanguo quantu*, "The lands and oceans are originally in a round shape and they form a globe hanging in the celestial sphere. It is like the yolk in an egg. As to the saying that the earth is square in shape, it should refer to its immobile status rather than its physical shape." As one may notice, these words directly target at the age-old Chinese concept of *Tianyuan difang* 天圓地方, or Round Heaven and Square Earth. Ricci further explains that people live all around this round earth, so that there is no fixed meaning of above or below. At any two opposite ends of this globe, people stand with their feet pointing at each other.

Secondly, Ricci in his 1602 map draws a picture of the nine heavens, which originated from the Crystal Ball theory of ancient Greek astronomy; and, in his

1603 map Ricci revises the picture into eleven heavens, adding the *zongdong tian* 宗動天 (Primum mobile) and the *caelum empyreum* (highest heaven) where God and angels dwell. This picture, explicitly in line with the fundamental Catholic doctrines, embodies a typical medieval view of heaven in contrast with the traditional Chinese conceptions.

Moreover, Ricci's world map carries a set of mapmaking methods totally different from the Chinese ones. In his preface, he explains the European cartographic concepts of latitude and longitude, and the methods to calculate the specific latitude and longitude of a place on the spherical earth. This is also tied with his use of a cylindrical projection commonly known as the Mercator projection. On the upper left and lower left corners of his map, there also appear two smaller pictures of the northern and southern hemispheres, viewed from the North Pole and the South Pole respectively, for which Ricci employs the azimuthal projection. In traditional Chinese mapmaking, the method of *jili huafang* may look somewhat similar to the latitude/longitude coordinates in the European world maps, but the two methods were born out of very different theoretical assumptions: The Chinese one conceptualized a flat earth, while the European one conceptualized a round earth. Accordingly, the use of cylindrical and azimuthal projections in Ricci's map caused great shock among Chinese scholars of the time (Fig. 2).

The later Jesuits in China continued to produce Western-style world maps, for example, Giulio Aleni's *Wanguo quantu* 萬國全圖 (A Complete Map of Ten Thousand Countries, 1623) and Ferdinand Viebiest's *Kunyu quantu* 坤輿全圖 (A Complete Map of the World, 1674). Aleni's map largely follows Ricci's choice for the oval projection and the latitude/longitude system. But the size is much smaller than Ricci's 1602 map, showing less detail in terms of land features and fewer place names (Caraci and Muccioli 1938: 385–426; Huang 2010: 451–457). As for Verbiest's map, two thirds of it depict the two hemispheres, which apply the stereographic projection that had emerged from European cartography since the sixteenth century (Song and

Fig. 2 Matteo Ricci's 1602 edition *Kunyu wanguo quantu* 坤輿萬國全圖 (Complete Map of Ten Thousand Countries of the World), Retrieved from the Library of Congress, https://www.loc.gov/item/2010585650/

Demattè 2007: 71–87, 190–195). The rest of the map contains fourteen cartouches of textual descriptions. Inside the hemispheres, the major continents and various countries are depicted in great details. On a technical level, Verbiest’s map further challenges the traditional Chinese conception of a square earth with its spherical earth in two hemispheres. He also points out that, when compared with other countries on earth, the size of China is not overwhelmingly dominant on such a world map. On the contrary, the glorious ‘Middle Kingdom’ is only located at the corner of the Eastern hemisphere. It is just a small part of a much larger world.

Along with their striking visual representations of heaven and earth, Ricci, Aleni and Verbiest also endeavored to depict a more or less idealized European civilization to the Chinese audience. In this way they constructed an image of the *other* as a counterpart to the Sinocentric mindset long held by the Chinese people. For example, in his well-known work *Zhifang waiji* 職方外紀 (Unofficial Records on the Foreign Countries, 1623), Aleni provides a highly positive account on European society: The states prosper with all kinds of products and commodities. The kings have remained peaceful relationships over generations through intermarriage. The officials are well paid and make a good living, hence no corruption in the government. Ordinary people can take school education at different levels, and they enjoy reading the classical works of ancient sages. There are also well-established legal system and social welfare. Moreover, all European people are faithful believers of the Christian religion, which promotes the orthodox teachings of the Lord of Heaven (Aleni 1623/1986: 1355–1372).

One may detect two subtle implications in such an idealistic description of European society: first, Europe is not a land of barbarians, but a center of civilization comparable to Chinese culture; second, Christianity has been the dominant religion in Europe for centuries, and its two essential doctrines—love the Lord of Heaven above all other things and love one’s neighbor as oneself—manifest that there is no heterodox or evil teaching in this religion. As it turned out, Aleni’s work not only challenged the longstanding Sinocentric mindset among Chinese people, but it also set a model for the geographical works of later Jesuits, including *Kunyu tushuo* 坤輿圖說 (Illustrated Explanation of the Entire World, 1672) by Ferdinand Verbiest, to promote new knowledge about the world outside of China (Chen 1994a: 129–133).

However, the Jesuits were not in the position to launch a campaign to completely remove Chinese mapmaking traditions. Largely due to the Chinese cultural imperatives, they employed a strategy of adaptation in the encounter of two sharply different cartographic traditions. One noteworthy aspect is Ricci’s choice to move the prime meridian from the Atlantic Ocean to the Pacific Ocean on his world map. China is therefore placed near the center of the map, a subtle change in line with the habit of Chinese audience who normally hold a Sinocentric view of the world. On a later color edition of Ricci’s map, pictures of animals and ships are added (Yan 1998: 138–139). This is obviously intended to arouse a sense of exoticism among the Chinese viewers.

Technically, Ricci’s map also carries some visible traces of traditional Chinese mapmaking. For example, he adopts the pictorial signs commonly seen in Chinese maps to depict mountains, rivers, oceans, etc. In his preface, he also mentions that he has referred to Chinese sources when making his world maps. Modern scholars have identified several works, including *Shanghai jing*, *Daming yitong zhi*, *Guang Yutu*, and *Wenxian tongkao* 文獻通考 (Evidential Study on Historical Records, 1307). Ricci may have used these works to incorporate up-to-date geographic knowledge of China and Asia into his Western-style world maps (Huang and Gong 2004: 72–79). In this respect, the challenges of Ricci were more or less compromised due to the adaptation strategy. The compromise not only facilitated the acceptance of their maps among the open-minded Confucian scholars, but it also stimulated enthusiasm to find alternative ways to position China in the newly known world.

In face of the Jesuits' challenges and adaptations, it is not surprising that some Chinese mapmakers, Cao Junyi included, would be willing to digest newly introduced Western cartography. When comparing Cao's map with a major edition of Ricci's world map, one can easily find evidence showing Cao's adoption of new geographical knowledge and cartographic techniques from the latter. The most noticeable feature is Cao's use of Ricci's oval frame representation of the world. The continents outside China, such as Europe, Africa, and the Americas, are depicted, though in a much smaller size and with distorted shapes. Most of the new place names, including *Ouluoba* 歐羅巴 (Europe), *An'eliya* 諳厄利亞 (England), *Da Xiyang* 大西洋 (Atlantic Ocean), *Xin yixi baniya* 新以西把尼亞 (New Hispania), and *Binghai* 冰海 (Arctic Ocean), should be directly borrowed from Ricci's map. However, it is difficult to know whether Cao did grasp good knowledge of these regions, as some of their Chinese names are rendered in incomplete forms.

More interestingly, Cao depicts a total of 36 lines as the longitudes, though without any marked degrees. Cao also uses two black-and-white scaled lines on the left and right borders of the oval frame, both marked with a set of corresponding latitude degrees, yet without drawing the actual lines. This reflects Cao's conscious, albeit not very careful, imitation of European cartographic techniques once used by Ricci in making his world map.

A further comparison of the general layouts of Liang Zhou's map and Cao Junyi's map also reveals the Jesuits' influence on the latter work. In Liang's map, the three sides—north, east, and south—of the landmass are surrounded by oceans. This seems like a bold step going beyond the traditional *Hua-Yi* maps, featured with lands on the northern and western sides of the central landmass and oceans on the southern and eastern sides. Several Ming maps, including *Daming yiting shanhe tu*, *Tiandi tu*, *Guang Yutu*, and *Gujin xingsheng zhitu*, definitely adopt this popular model. Liang's map stands out with oceans encircling the central landmass on three sides. However, Cao's map goes even farther. In it, a huge landmass appears, surrounded by oceans on all four sides. China, or the Middle Kingdom, is still located at the center of the landmass, but now it can be reached via both land and sea routes from Europe or other remote regions.

Though Cao Junyi did not explicitly mention Ricci and other Jesuits, he must have known their Western-style world maps and probably even acquired a copy as the main source for drawing the regions outside China on his map. Given the visible traces of imitation, there is no doubt that Cao has borrowed from the Jesuit world maps at his own discretion to present a kind of new, yet largely distorted, Western cartographic knowledge.

4 Persistence of the Sinocentric World Order

Liang Zhou's map and Cao Junyi's map share a key feature. Both situate China at the center of the world. This feature suggests that, despite their recognition of or adaptation to the Jesuit world maps, they still tended to uphold the longstanding conception of a Sinocentric world order.

Throughout the seventeenth century, Chinese scholars and mapmakers continued to use a set of age-old astronomical and cartographical concepts. The most influential one was the cosmographic belief of *Tianyuan difang*, namely, Round Heaven and Square Earth, originated from the *Gaitian* 蓋天 (Canopy Heaven) Theory in ancient times. In *Tushu bian* 圖書編 (Compilation of Illustrations and Writings, 1613), the leading late Ming Neo-Confucian Zhang Huang 章潢 (1527–1608) explains the concept with a vivid illustration, "The body of the heaven is like a ball. Half of the ball is filled with water and a piece of plank is floating on the surface. The plank refers to the earth. When we put something on the plank, even though the ball turns around, how can the plank constantly move?" (Zhang 1613: 512) The concept survived over a millennium in Chinese history and has been adopted in many artistic works and architectural designs. To draw a map of the world was an important way to embody such a concept, with China being located at the center on a flat and square earth, surrounded by the egg-like heaven or covered by the canopy-like heaven (Zhu 1998: 598–600). The concept was so persistent that many Chinese maps made in the eighteenth and nineteenth centuries still adopted similar representations. The *Tiandi dingwei zhitu* 天地定位之圖 (Position of Heaven and Earth, 1721) from a work on geomancy by the mid-Qing scholar Wei Mingyuan 魏明遠 (dates unknown) is a good example. In it, heaven is depicted as a round circle, along which there are signs of the Eight Triagrams and the Chinese constellation of twenty-eight mansions. The square inside the circle represents the earth, with a sketchy depiction of the territories of China surrounded by the nomad states in the north and a few island countries in South China Sea. Apparently, in the Chinese conception of the world, China should always be regarded as the geographical center of the square earth.

Largely influenced by the concept of *Hua-Yi* distinction, Chinese mapmakers also tended to represent China as the cultural center of the world. It should be superior to all other tributary states, seen as inferior, half-civilized or barbarian by nature. In *Gujin huayi quyu zongyao tu* 古今華夷區域總要圖 (General Map of Chinese and Barbarian Territories from Past to Present, ca. 1100), a map dated back in the Northern Song Dynasty (960–1127), tributary states such as Khitan and Xi Xia appear at the margins of the map. Their territories are depicted in a much smaller size than that of China. The island countries are only referred to by name, without any effort to depict the actual coastlines. This stereotyped *Hua-Yi* model has been adopted in many maps in the Ming and the Qing periods. These maps show few traces of influence of the Jesuit world maps. As far as China lay at the center of "all under the heaven" and retained its superior status as the Middle Kingdom, these mapmakers did not seem to care much about a realistic representation of the outside world.

Due to lack of sufficient knowledge of the remote regions, imaginary accounts and images often appeared in early Chinese texts. For example, the *Shanhai jing* 山海經 (Classic of Mountains and Seas) records a number of accounts on strange barbarian peoples in the Western lands, including people with a human body and face but bird-like wings and beaks, people with crossed legs, long arms, and three heads, small people only a few inches tall, black-skinned immortals, white people, people who have only one hand, one foot, or one eye, etc. These accounts suggest that China is a civilized country superior to the barbarian states located at its borders (Smith 1996: 17–18). As one of the earliest Chinese works on foreign lands, *Shanhai jing* exerted great impact on the Chinese conception of the world. It also became a major source for later Chinese mapmakers, who borrowed place names directly from it to reinforce such a Sinocentric worldview.

The above stereotyped concepts can also be found in Liang Zhou's and Cao Junyi's maps. In the title of Liang's map, he uses the term *Qiankun* 乾坤 to refer to the whole universe. Qian and Kun were originally two of the Eight Triagrams from the Confucian classic *Yijing* 易經 (Book of Changes). In his preface, Liang also refers to the remote places by the word *ye* 野, or wildness. It is evident that, when using such an expression, he had in mind the advanced Chinese civilization and expressed a sense of cultural superiority.

At the beginning of his preface entitled *Wanguo daquan tushuo* 萬國大全圖說 (Explanations on the Complete Map of Ten Thousand Countries), Cao also refers to *Yijing* to explain the cosmological origin of the world: "The Ultimate One gave birth to Two Branches, then the Two Branches gave birth to Four Images, the Four Images gave birth to the Eight Triagrams, till the Eight Triagrams gave birth to ten thousand things and people in the world." To him, a person should start with this established theory before he could develop a broad understanding of the world. After giving some major territorial names and administrative units within the Ming Empire, Cao goes on to mention a dozen of tributary states that surround the Middle Kingdom, including Japan, Korea, Liuqiu, Vietnam, Thailand, Malacca, and Java. Interestingly, in the following larger group of place names mentioned by Cao, there appear the land of the immortals, the land of hairy people, the land of three-headed people, the land of long-armed people, and the land of small people, all of which are from *Shanhai jing*. Some more remote regions, such as India and Persia, are also mentioned together with the names of nomad peoples to the north of China, e.g., the Huns, the Tartars, and the Jurchens. Cao's representation of such geographic knowledge fits well what John King Fairbank would call the 'three zones'—the Sinic Zone, the Inner Asia Zone, and the Outer Zone—in a Sinocentric world order (Fairbank 1968: 1–13).

Following the extensive list of 'ten thousand countries', Cao gives his summary: "[These tribute states] spread in all directions. From the South Pole to the North Pole, and from the East Ocean and the West Ocean, all are included in the Four Seas." It is not surprising that such a Sinocentric mindset is reinforced in Cao's cartographic representation. In the column on the right side of his map, Cao lists the names and locations of the major military forts along the northern borders of China. In the column on the opposite side, he gives the names of the tributary states and barbarian lands, as well as their distances to China. On his map, foreign regions are depicted around China, the Middle Kingdom, in a style very similar to the conventional *Hua-Yi* maps. The territorial area of the Ming Empire takes at least ¾ of the whole landmass. Though Cao still includes the five continents learned from the Jesuit world maps, they are greatly reduced in size and put into the remaining ¼ land area on the map. Moreover, the prominent size of China results in another special treatment: North America and South America appear in a much smaller size and look more like two big islands, located far apart from each other in the *Da Dongyang* 大東洋 (Great Eastern Ocean), a term first used by Ricci in his world map. In this case, despite his attempts to adopt some new knowledge of European cartography, Cao still adhered to the traditional Chinese view of a Sinocentric world order.

5 Late Ming Chinese Adaptations of the Jesuits' Maps

Among Chinese maps made in the late Ming period, Cao Junyi's map was not the only one that showed a conscious effort to enter into dialogue with European cartography. Some open-minded Chinese scholars, especially those who converted to Christianity, welcomed new knowledge in astronomy, geography, cartography, and other fields introduced by the Jesuits. Many of them were not much concerned about whether to keep China at the center on a map to highlight its superior status above all other countries. They would rather talk about more 'scientific' issues such as "the thickness of the successive superposed heavenly spheres, the distance from the earth to the sun, moon, and stars, and their comparative magnitudes, the diameter of the earth and distances on its surface" (Spence 1983: 147). Li Zhizao 李之藻 (1569–1630) and Yang Tingyun 楊廷筠 (1557–1626), two elite converts of the time, were among those who actively promoted the Jesuits' works on Western Learning. They trusted their expertise in astronomy and calendar-making, and they also helped publish and reproduce Western-style world maps.

Li Zhizao was among those who first embraced the Jesuit sciences. He met Ricci in Beijing in 1601. Convinced by Ricci's expertise in cartography and mathematics, he became determined to learn from this missionary who meanwhile called himself a Western scholar. Soon, Li knew how to make sundials and star charts in a European fashion. He also assisted Ricci to translate a series of astronomical and mathematic works (Fang 1966: 85–115).

In his preface to Aleni's *Zhifang waiji*, Li Zhizao recalled his first encounter with Ricci and his world map:

> In 1601 Matteo Ricci came to visit Beijing. I went together with several friends to see him. There, hanging on the wall, was a complete map of the earth with detailed [longitudinal] lines and degrees. Ricci said, 'This is the route from the West where I came from. There are some books about the mountains and rivers as well as the records of customs. I have submitted them to [the Emperor] at the imperial court with the help of someone.' Then he told me that the earth is a small circle within the big circle of heaven; the two circles have corresponding 360 degrees; every 250 *li* on earth between south and north shall be marked by one degree on the sundial. … I have examined these theories and they were all correct. I then understood that the method of *huafang fenli* 畫方分里 [dividing distances by drawing rectangular grids, i.e., *jili huafang* 計里畫方] among the Tang mapmakers was still very crude. For this reason, I translated Ricci's illustrations into Chinese and printed his map on a screen (Li 1626/1986: 345).

Having realized the defects in traditional Chinese mapmaking, Li became an active follower of European cartography. He supported Ricci in making a large-scale world map, the 1602 edition *Kunyu wanguo quantu*, which later became the most influential one among his Chinese maps. In his preface to the 1602 map, Li praises the value of new geographic knowledge and cartographic methods introduced by Ricci:

> There had been no refined edition of the maps made in the past. The recent print of *Guang Yutu* looks a bit more careful in using Jia Dan 賈耽 (730–805)'s method of *huacun fenli* 畫寸分里 (a variant name of the *jili huafang* method). However, after a detailed review of it against the information from *Daming yitong zhi* and other provincial gazetteers, one should note many near and afar places missing. … There has not been a map like the one by *Xitaizi* 西泰子 (i.e., courtesy name of Ricci), who studies the celestial patterns to verify the geographical forms on the earth. The engraving techniques (in mapmaking) are used in Europe, with lines crossing the South Pole and the North Pole as longitudes and lines in parallel with the equator as latitudes. The 360 degrees of the celestial globe can be matched by the corresponding territories on the earth.

Li goes on by praising that Ricci's map contributes a number of findings that have been unknown in China for a thousand years. As Ricci is a man who has truly grasped the Way, what he claims must not be something fabricated. Li does admit that some of Ricci's claims may sound astonishing, but he would point out many resemblances between Ricci's illustrations and ancient Chinese works. He finally affirms that "Scholars in the past were good at talking about heaven. When I look at the map [of Ricci], it appears to be coincident with their thoughts. [Peoples of] the Eastern Ocean and the Western Ocean share the same mind and the same principle. Isn't it true in this case?"

As for Yang Tingyun, he also made efforts to promote and defend newly introduced Western knowledge. In his preface to Aleni's *Zhifang waiji*, Yang clearly takes the side of the Jesuits,

> Both [heaven and earth] are round in shape, so there is neither beginning and end nor center and margin. The lightest and clearest part constitutes the heaven, which has multiple levels, all extending outside the earth. The heaviest and most turbid part forms the heart of the earth, right at the center of the heaven. Since the earth is the original place of heavy and

turbid things, any object with a shape and quality may be attached on it (Li 1626/1986: 351).

What Yang argues for here is the Ptolemaic geocentric model of European astronomy, positioning the earth at the center of the universe. He expresses his critical views on the traditional Chinese cosmological concepts of "round heaven" and "square earth". This view also echoes the Jesuits' claim that China is only a part of the world. It could be a center, but not the only one, because there are other centers on the earth, including European civilization. These arguments are mostly aligned with the Jesuit cartography, and they certainly stage a challenge to the old China-centered representation.

In addition to support from elite converts like Li and Yang, some open-minded scholars showed keen interests in the Jesuit world maps and started to make varied copies and reproductions. Zhang Huang, for example, reproduced two Western-style world maps based on an early world map made by Ricci in Nanchang around 1596. The first is entitled *Yudi shanhai quantu* 輿地山海全圖, with an oval frame representation using the cylindrical projection. Yet, it only provides the names of the continents and oceans, with much less cartographic details and textual descriptions than Ricci's 1602 *Kunyu wanguo quantu*. The second map, entitled *Yudi tu* 輿地圖, consists of two parts—one viewed from the North Pole and the other viewed from the South Pole. These parts appear to be made with the azimuthal equidistant projection, and about 400 place names are marked on the map. Zhang further clarifies that these novel Western-style world maps are the examples showing the round shape of the earth (Huang and Gong 2004: 12–18) (Fig. 3).

In addition to Zhang Huang's copies, a sequence of reproductions and adaptions, were made by other late Ming scholars and mapmakers. Ricci's *Shanhai yudi quantu* 山海輿地全圖, printed in Nanjing in 1600, was copied by Feng Yingjing 馮應京 (1555–1606) in *Yueling guangyi* 月令廣義 (Extended Commentaries of *Yueling*, 1602), and Feng's reproduction was in turn copied by later scholars, for example, Wang Qi 王圻 (1530–1615) in *Sancai tuhui* 三才圖會 (Illustrated Encyclopedia of Heaven, Earth, and Man, 1607) and You Yi 游藝 in *Tianjing huowen qianji* 天經或問前集 (First Part on the Questions and Answers regarding Celestial Phenomena, 1675). These reproductions were modeled after the oval projection of Ricci's map. The names of the continents and oceans, including Asia, Europe, Africa, Americas, Magellanica, the Atlantic Ocean, and the Pacific Ocean, appear on these maps. However, partly due to the small size of these wood-block prints, and partly due to the lack of solid European cartographic knowledge, these maps show distorted shapes of the continents. As a result, they can hardly be considered a faithful duplication of Ricci's world map.

Despite the obvious defects in their cartographic representation, this group of Chinese scholars more or less took for granted the new ideas advocated by Ricci and other Jesuits. For example, Wang Qi in his illustration highlights the Western concept of a round-shaped earth, "The earth and the oceans originally have a round shape. The earth lies at the center of a heavenly sphere, like the yolk in an egg.

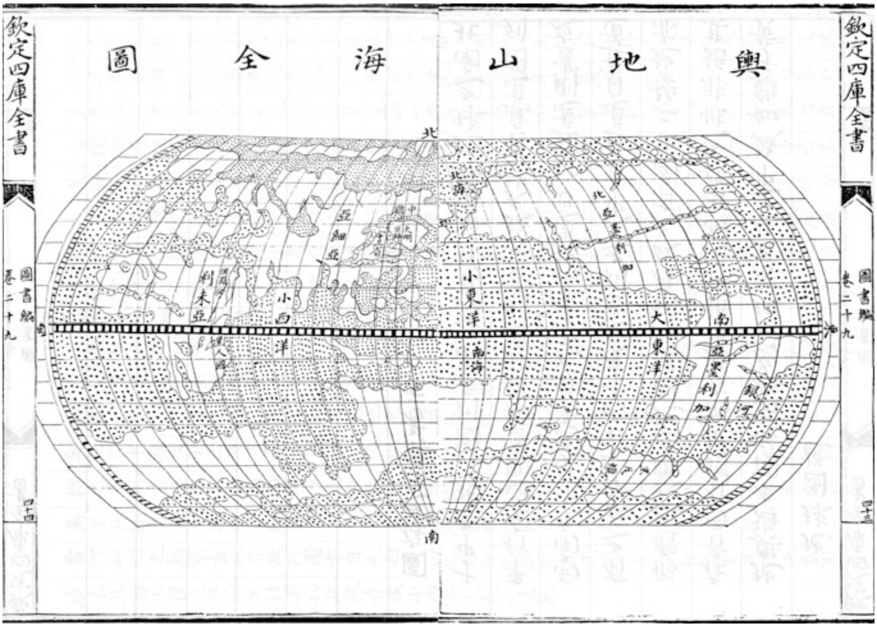

Fig. 3 Zhang Huang 章潢, *Yudi shanhai quantu* 輿地山海全圖 (Compete Map of Mountains and Seas in the World, 1613), scanned image from *Siku quanshu* 四庫全書 (Complete library of the Four Treasuries, 1773–1783), vol. 969, 553–554

Someone says that the earth is square. This should refer to its immovable nature, rather than its shape." This statement borrows almost exactly the words of Ricci in his preface to *Kunyu wanguo quantu*. The egg-yolk metaphor should be familiar to many Chinese scholars of the time, as it had long been discussed in the *Hun-tian* theory from ancient Chinese cosmology (Chen 1984: 157).

Ricci also applied the stereographic projection to make a world map that consisted of the Eastern Hemisphere and the Western Hemisphere. The original copy was lost, but a Chinese reproduction of it appeared in Cheng Baier 程百二 (1573–1629)'s *Fangyu shenglue* 方輿勝略 (A Survey of the Earth, 1610). Different from Ricci's putting China near the center on his earlier oval pattern world maps, China on Cheng's map is put at a corner of the Eastern Hemisphere. Understandably, this map may have incurred a shocking experience among the Chinese audience of the time.

From the above examples, one may see that the numerous late Ming reproductions and adaptations revealed a multifold process of the digestion of the Jesuit world maps. They formed a new trend in mapmaking and set a favorable context for Cao Junyi to make his hybrid world map at the end of the Ming Dynasty.

Compared to the other late Ming Chinese maps in line with the Jesuits' models, Cao's map has a distinct in-between nature. On the one hand, it is not a faithful reproduction of Ricci's world map. As discussed before, the longitudes and latitudes are not fully shown, while the continents of North America and South America become two islands in distorted shapes and are set far apart in the ocean. In this sense, Cao seemed to shun away from the claim of Li Zhizao, who has boldly proposed to learn from the knowledge of the Jesuits. Cao's lack of passion and sincerity to adopt European cartographic knowledge also resulted from his adherence to the age-old conception of a Sinocentric world order.

On the other hand, Cao's map differed from many earlier Chinese adaptations of the Jesuit world maps. Mainly confined by the small size of wood-block prints, the adaptations such as Zhang Huang's *Yudi shanhai quantu* and Feng Yingjing's *Shanhai yudi quantu* cannot include all place names and detailed illustrations. Though Cao's single-sheet map was also smaller in size (about 124 cm × 124 cm) than Ricci's *Kunyu wanguo quantu* (about 167 cm × 317 cm), it still had enough space to show the shapes and borders of foreign regions, and to include ample information about place names, mountains, and rivers. It is also noticeable that the part on China often appeared to be sketchy in other seventeenth-century Chinese reproductions. However, likely using Liang Zhou's map as a major source, Cao could provide a lot more detailed information about the terrestrial features and administrative units (capitals, prefectures, and counties) of the Ming Empire during its last years.

In a sense, the distinct hybrid nature of Cao's map may be understood as the result of dynamic exchanges and negotiations among the Jesuits' new models, the traditional *Hua-Yi* maps, and the Chinese reproductions or adaptations of the Jesuit maps at various degrees. His map marked the emergence of another trend among some late Ming mapmakers, who took efforts to incorporate the practices in all major groups and create a new representation of the world, a style of cross-cultural blending. It continued to serve as a model for some cartographers during the Qing period, thereby leaving a visible mark in the historical encounter of Chinese and European cartographic traditions (Smith 2013: 67–69).

6 Conclusion

Through analysis of Cao Junyi's map as an exemplary piece, this case study presents a complex process of cross-cultural hybridization in mapmaking. The map resulted from decades of challenges, responses, and negotiations among the Jesuits and late Ming scholars on how to depict China and the world in the 'right' ways. It turned out to be a conscious attempt to bridge the gaps and tensions between Chinese and European cartographic traditions. It was the Jesuits who first challenged traditional Chinese knowledge of the world, while the Chinese responded to the challenge in different ways. On the other hand, however, the Jesuits in face of the imperative Chinese tradition had to modify the original European maps to adapt to the Chinese sources and cultural values. The process was a two-way, boundary-crossing interaction, rather than a one-way transmission of Western knowledge to imperial China.

With a detailed comparison of Cao's map and Liang Zhou's map, this study reveals a set of striking similarities between these two maps, and proposes that Liang's map may have served as a major source for Cao's map. However, the noticeable changes in Cao's map suggest a subtle transformation within the context of the late Ming cross-cultural encounter. A number of factors motivated Cao to combine different or even conflicting concepts and patterns in his re-making of the world.

Moreover, this study demonstrates that the exchanges between the Jesuits and Chinese scholars in mapmaking did not follow a simple give-and-receive pattern. Instead, it was a complex process conditioned by factors such as ideological stereotypes, religious preferences, intellectual interests, and aesthetic tastes, etc. The popular assumption that Chinese cartography became 'backward' during the late imperial period in contrast with 'advanced' Western cartography is problematic in this case. The map of Cao Junyi shows us an example that not only adhered to the ideas and practices in traditional Chinese mapmaking but also responded to the novel Western models. Hence, there is no reason to neglect the role of those lesser known mapmakers like Cao Junyi. They witnessed and expressed their own voices in such a great cross-cultural encounter.

As has been pointed out by scholars in recent research, the distinction between scientific maps and pictorial maps is an illusion. No cartographic representation can be said to be purely "objective" (Smith 1996: 76). One should realize that all the maps discussed in this study, whether Chinese or Western, were the products of various cultural groups aiming for different purposes. Bearing in mind this critical view, one can better understand the challenges and adaptations of the Jesuit world maps as well as the multilayered responses from the Chinese side.

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Cartographic Accuracy and the Myth of Manchu Origins on the 1719 *Overview Maps of the Imperial Territories*

Fresco Sam-Sin

Abstract The fourth khan of the originally inner-Asian Manchus, Elhe Taifin (r.1661–1722), initiated a project to map his Daiqing Empire (1636–1912), of which a large part consisted of the Chinese territories. The resulting atlases, made up of individual sheets and entitled Overview Maps of the Imperial Territories (1719) presented the khan with an opportunity to show his people how far they had come since his great grandfather Nurhaci had attacked Ming China. This cartographic project gave the court a canvas to map its highly mythical identity-building narrative surrounding their origins wherein, amid a hyperbolic landscape, a heavenly, immortal maiden became pregnant with the Manchu primogenitor by eating a red berry. The dissemination of this myth was made into a priority of the court, but so was the imperial policy on increasing cartographic consistency. The clash of these two agendas (myth vs. accuracy), and its translation onto the Overview Maps, forms the topic of this study.

1 Introduction

Maps combine text and visuals into one single image, making them into objects with high impact potential. Empires have (mis)used such potential to reinforce their agendas. Cartography hands them a legion of opportunities to, within one single image, anchor their interpretations of their (and others') space in history, in the present, as well as for the future. The present study revolves around the largest cartographic project carried out by the Daiqing empire (1636–1912), which surveyed all of its territories and some of its dependencies between 1708 and 1717, producing several large Overview Maps of the Imperial Territories

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(*Huangyu quanlan tu* 皇輿全覽圖, hereafter referred to as Overview Maps). On these maps, at least in theory, official standpoints on the court's mythical origins clashed with its policy of increasing cartographic accuracy. The question is: how did these clash on the Overview Maps? In order to answer this question, let me start by introducing the Daiqing Empire and the Overview Maps.

1.1 Daiqing

The Daiqing[1] (Qing 清) is well known as the last dynasty of China, with The Last Emperor abdicating in 1912. During the eighteenth century, the Daiqing Empire expanded into one of the largest land empires in world history (see Fig. 1). Crucial to observe, is that the Daiqing ruling elite were not Chinese (Han 漢) but Manchu, an Inner Asian, Siberian, Tungusic clanspeople, with their own system of beliefs, language, and script.[2] Prior to ascending to the throne in Beijing, anno 1644, Daiqing rule had already been established in 1636, when consolidating its power to the northeast of the Great Wall (more on this in Sect. 2.1). In other words, after 1644 China became *a part of* the Manchu Daiqing Empire.

The Daiqing Empire grew out of a small conglomerate of villages to the north of Korea in the second half of the sixteenth century (Fig. 1, yellow pin). Besides those herding animals, the villagers sustained themselves by hunting, fishing, and gathering. Some clans accumulated wealth by trading ginseng, furs, and other products with neighboring countries. Nurhaci (1559–1626) was chieftain of one such clan. He brought wealth to his people, and within three decades of trade, and expansive wars and diplomacy between him and the rulers of the Mongols, Ming Chinese, and Koreans, Nurhaci had arrived at a pivotal juncture where he had no choice but to advance into hostile territories. Soon afterwards his son and heir, Hong Taiji (1592–1643), established the Daiqing Empire at the Manchu capital of Mukden, present-day Shenyang.[3] A few decades after arriving in Beijing, the Manchu court initiated the project of the Overview Maps, overseen by Elhe Taifin, who, to the Chinese and to posterity, was known as Kangxi, khan of the Manchu Daiqing empire, and thus also emperor of China (r.1661–1722).

[1]Transcriptions of Chinese into Hanyu Pinyin are given between brackets for clarity. The main transcriptions are all from Manchu, following Daiqing transcription.

[2]Explore the hybrid use of Manchu script and Chinese characters along the frontier areas of the Great Wall on bit.ly/hyqlt.

[3]See black pin in Fig. 2. Shenyang 瀋陽 was also known as Shengjing 盛京 in Chinese, or Xen Yang in Manchu or, as in the Overview Maps, Mukden hoton, *hoton* meaning 'city'.

Fig. 1 The Daiqing empire (in dark grey), with its tributary states (lighter grey) and its neighbors (lightest grey). The conglomerate of Nurhaci's villages are marked with a yellow pin (adapted from Jerrch and Nat. CC BY-SA 3.0 via Wikimedia Commons)

1.2 The Overview Maps[4]

The most famous edition of the Overview Maps is the 1719 copperplate edition, measuring approximately 4.5 by 3 meters, including much of the territory of today's People's Republic of China, as well as large areas in today's Russia, Mongolia, the two Koreas, and Taiwan.[5] Formatted as a multi-sheet map consisting of 41 individual sheets (hence the plural *Maps*), it was the largest mapping endeavor based on large-scale land surveys the world had ever seen: largest in terms of geographic scope, timing needed to complete the project, and number of personnel involved, as

[4]The entire map with all references made to the pins and routes may be consulted via bit.ly/hyqlt. This permanent upload is part of the project QingMaps, an online platform for storytelling and visualization on and comparing of Daiqing cartography. See: QingMaps.org (Cams et al. 2017a).

[5]See: Cams (2017: 177–203) for an introduction to the various editions of the *Overview Maps*.

both Daiqing officials and European Jesuit missionaries worked for more than a decade, in up to three teams operating simultaneously, to complete the surveying work.[6]

Without the expertise of the court's Jesuits, who had been present in Beijing since the early seventeenth century, and without the trust placed in them by the khan, the Overview Maps would most likely not have reached the level of accuracy that they did. Indeed, the areas where the Jesuits were denied access and had to leave the surveying to others, are highly distorted (e.g. Korea). As a result, it is often claimed that it was the Jesuits who inspired the khan to start the mapping of his realms (e.g. Yee 1994: 180). However, this may, as Catherine Jami puts it, 'very well be the result of the French Jesuits' successful communication policy in Europe' (Jami 2012: 255). Regardless of who initiated the project and how it was conducted, in this study I will approach the 1719 edition of the Overview Maps philologically, meaning: looking at the atlas as text in the broadest sense, 'interpreting the texts and the entire culture that underlies them' (Daniels 2003: 76).

1.3 Aims

This study aims to assess the extent to which the Elhe Taifin court committed to the cartographic accuracy of the territories that fell within its own jurisdiction. Herein, I am interested to explore the level of editorial involvement and intervention of the Elhe Taifin court in the 1719 printed edition of the Overview Maps: could the early eighteenth century political reality, and the ideological importance of a Daiqing heroic and mythical space and past, tempt the court to use the powerful materiality of maps to compromise on the accuracy of the cartographic endeavor?

I will approach these questions by focusing on one demarcated case: the Daiqing official narrative of the Manchu origins. The backdrop to the Daiqing origin narrative is the present-day Northeast of China (Dongbei 東北, also known as Manchuria), from where the Manchu armies conquered China in 1644. The Daiqing court attached great, almost existential, importance to the narrative as a formative, common ground for Manchu identity. Of this narrative, I will limit myself to the conflated passage wherein two originally separated storylines merged: the first being the myth of three heavenly maidens followed by the birth of the primogenitor of the Manchu imperial lineage, and the second being the description of the Manchu sacred region. The narrative mentions several mountains and waters, all of mythical

[6]Basis for this article is the paper that Mario Cams (University of Macau) and I presented at the conference of Mapping Asia: Cartographic Encounters between East and West on 16 September 2017. Flanking the conference, Cams and I were responsible for the paper and digital assemblage and reproduction of the Overview Maps at the Mapping Asia exhibition at Museum Volkenkunde in Leiden. Text and background were presented in digital format and can be found online at bit.ly/mapping-asia-hyqlt (Cams et al. 2017b). Assemblage of the map was supported by the Hulsewé-Wazniewski Foundation and the Manchu Foundation.

proportions. I believe that their representation or absence on the Overview Maps can shed light on the editorial choices between accuracy and myth, or, put differently, between the scientific and ideological agendas of the Manchu Daiqing court. But first, I will place the *Overview Maps* in their historical context, by placing them within the statecraft and scholarship of the khan Elhe Taifin alongside other imperial projects.

2 Clash of Agendas

Elhe Taifin took exceptional interest in the sciences, including as taught by the Jesuit missionaries and known as Western Learning. During his reign of six decades, the khan initiated (and intervened in) many scientific endeavors at the court (Jami 2012). With regard to the 1721 mathematical compendium of the Imperially Composed Essence of Numbers and their Principles (*Yuzhi Shuli jingyun* 御製數理精蘊), Jami remarks: 'The words 'imperially composed' in front of the title of the compendium (…) were not merely honorific.' (*ibid*: 356). Indeed, khan Elhe Taifin had the habit of intervening in any work that he found interesting, especially if it was operable as a, what Mario Cams has called, 'potent tool of statecraft' (Cams 2017: 43). Not surprisingly, it was during his reign that it had become imperial policy increase cartographic accuracy and consistency that 'might help him manage his rule and increase his control over the different peoples and vast territories comprising the Qing' (*ibid*: 44). While Elhe Taifin persevered in stressing the role of the sciences in statecraft, there were situations where the pursuit of this was challenged. Before considering the likelihood of noise in the Overview Maps, let me start by setting it beside another contemporary project: the *Han i araha manju gisun i buleku bithe,* or the Imperially Composed Mirror of the Manchu Language (25 Vols. Hereafter referred to as Mirror).[7]

2.1 Contemporary Project

The Overview Maps did not receive the court's predicate of *han i araha* 'Imperially Composed.' As with the Overview Maps, the lexical Mirror project was a lengthy project, running between 1673 and 1708. One of the postfaces to the Mirror states that, after the project team had worked for two decades on drafting all entries, the khan intervened and brought the Mirror to completion 'in a few years' time.' According to his own account, he 'examined and corrected each entry' using his 'vermilion brush.'[8] We know this brush best from the khan's correspondences with

[7]Translations in this section are from Saarela (2018: 67–71).

[8]mini beye fulgiyan fi i emke emken i kimqime dasaha. The text of Elhe Taifin's preface can be found under ID 7795 at Manc.hu/reader.

his family and highest officials, using it as an assertive tool to react and adjust where necessary (e.g. Čimeddorǰ 1991). Taking the editorial remarks in the Mirror at face value, it tells us that the predicate 'Imperially Composed' in the Mirror project meant, as with the mathematical compendium mentioned earlier, that the khan intervened directly in its content. An important question regarding the Overview Maps, then, is: what does it mean that the Maps did not receive this 'not merely honorific' *Han i araha* predicate?

Unlike what the title suggests, the Imperially Composed Mirror of the Manchu Language was more than a documentation project of the Manchu language. Apart from being a vehicle to purify and codify the Manchu language (Manchu started to be written down only ca. 1600), the court also used the Mirror to show (off) its deep knowledge of Chinese Hochkultur as a way to demonstrate its fitness to rule over the Chinese territories. The Mirror was a monolingual Manchu reference work. It was not multilingual by design, yet I would argue that it was multicultural, reflecting the Daiqing reality that found itself challenged in sustaining an own identity while, at the same time, trying hard to earn the right to rule China. As a result, Elhe Taifin larded the definitions in the categorically organized entries of the Mirror with literary citations from Chinese classics and histories (not Manchu). Elaborating on his own role in these citations, the khan explains that, in addition to 'inquiring about the opinions of the elderly,'[9] he 'always added proof based on the classics and histories.'[10] For example, the definition of the lemma *mangga* in the 'Archery section' (*Gabtan i haqin*) reads:

> Archery is *mangga* when a strong, well-shaped bow produces a clean release, hitting the target effectively. 'A *mangga* archer is Shu. A good charioteer also.' (Book of Odes, chapter 'Shu has gone hunting', section 'Odes of Zheng').[11]

This *Book of Odes* (Shijing 詩經), dating from the eleventh to seventh century BC, was part of the Confucian canon of the 'five classics' of Chinese literature. Thus, apart from the purification and codification of the Manchu language, the Mirror aimed to elevate the status of the Manchu language and therewith Manchu rule. However, the citations were not geared to the context of use, merely focusing attention on the court's equivalence to the Chinese literati. Here, linguistic purification and codification clashed with cultural elevation and authority.

The above context shows us three things that are relevant when addressing our main questions. First, 'Imperially Composed' is proven to be synonymous with 'editorial intervention by Elhe Taifin,' a label that the Overview Maps did not receive. Second, as a side note to the first point, the khan used his brush in personal correspondence, influencing the course of events. Third, the khan compromised on

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[9] fe sakdasa de aname fonjime (*ibid*).

[10] urunakv ging suduri de nikebufi temgetu obume (*ibid*).

[11] The 1708 edition of the *Buleku* can be found on digital.staatsbibliothek-berlin.de under the ID PPN3358708845.

effective knowledge sharing by adding misplaced Chinese citations (in Manchu) to his Mirror as a proof of literacy. It is this clash between function and ulterior motives that I will explore in the context of the Overview Maps.

2.2 Clash

Empires are built on space. One of the obvious aspects that sets the project of the Overview Maps apart from the dynamics of the Mirror is this very factor of spatiality. It has been suggested that military strategy formed the impetus for early Daiqing mapping practices (Cams 2017: 43), and although this may very well have still played a role in the initiation of the surveying for the Overview Maps in 1708, mapping practices may also have served as a 'potent tool of statecraft' in other respects, notably in defining imperial space. Apart from the core function of documenting and referencing, both the Mirror and the Overview Maps sought to extend Manchu power beyond its own native realm, by citing Chinese literature in the case of the Mirror, and cartographically oversizing the borders of their realm in the case of the Maps. It translated into the representational distortion of large areas on the map, such as the Baikal area and Tibet. Here, the aim of accuracy to serve the practical and functional cause seems to have got lost in Daiqing imperial aspirations.

Can a clash of court agendas even exist if the Overview Maps were used for internal reference only? Seonmin Kim claims that the Overview Maps 'defined what China was territorially to the rest of the world' (Kim 2017: 51). As a rule, surveyors were bound to professional secrecy. Prints that might leave the Imperial Workshops would remain unavailable to the public. Thus, in principle, in any case during the rule of Elhe Taifin and at the latest until the twentieth century, prints of the Overview Maps were stored exclusively at the court, and were meant for court and official eyes only (Cams 2017: 179). In reality, however, it is hard to determine to what extent, if at all, the court was anticipating any future dissemination of the Overview Maps when finalizing its content. Regarding the flow of information, for example, when Manchu superintendent Mukedeng, who held geographical information on the area of Xanggiyan alin (White Mountains) on the Daiqing-Korean border, was asked for a map of the area by one of the Korean translators in the envoy, he responded: 'I can't give you [information on] the mountains and rivers of the Great Country, but Mt. Paektu[12] is your country's, so why should there be any problems in giving it to you?' (Schmidt 2007: 145).[13] Although its sharing was unlawful, could not the Overview Maps have been used as a powerful object to

[12]Paektu or Paektusan is the Korean name for the aforementioned White Mountains. These are the same mountains as the Golmin Xanggiyan Alin, or Changbaishan 長白山.

[13]Schmidt's translation of Chosŏn wangjo sillok, Sukchong sillok, 51: 26b.

show to prominent visitors to the court? If so, this may have been reason enough to introduce a propagandist agenda onto the map by oversizing one's own territories.

Different agendas can be, and have been, combined. However, to this end, a map may be one of the more unforgiving objects. In his article on Elhe Taifin's rhetoric of geographical integration, Stephen Whiteman proposes that the Overview Maps despite 'its seeming objectivity' that 'the imperial territory imagined by the atlas was also a fundamentally rhetorical one' (Whiteman 2013: 33). Whiteman takes the Overview Maps to be one of many strategies to reinforce the location of Daiqing ritual and geomantic roots, focusing on the area of the White Mountains, far away from Han-Chinese China. In Kim's wording, Elhe Taifin's mapping of the Manchu homeland 'was clearly linked to his desire to distinguish Manchu identity from Han Chinese culture' (Kim 2017: 51). In my reading these claims suggest that the khan was actively involved in the mapping of the Manchu northeast on the Overview Maps and that he, moreover, had an ethnic agenda in mind during its execution; an agenda which, as we shall see, would be hard to reconcile with his policy of cartographic accuracy.

3 Manchu Common Grounds

The following subsections aim to illustrate the complexity of the background of the Manchu court that commissioned the Overview Maps. Herein my chief goal is to indicate why the mapping of this background offered a potential clash between the scientific and ideological agendas of the Elhe Taifin court. Subsequently, the end of this section will return to the Overview Maps by summarizing the surveys of the Manchu common grounds.

3.1 The Manchu Problem

One of the biggest worries of Elhe Taifin's court was the waning of, or lack of, clearly defined Manchu identity among its subjects. More than 70 years after the occupation of China (1644), the khan laments that he 'will not have us abandon our Manchu customs! Ever since I was a little boy, I have been surrounded by traditional, elderly Manchus. It is why I still dress, eat, and do things in a Manchu way, leaving the traditions unchanged.' (Zhao et al. 2018: 45–52). Here, Elhe Taifin is echoing his grandfather, khan Hong Taiji, who in the same year he declared Daiqing rule (1636) warned that the Manchus 'should fear deeply that the children and grandchildren of later generations will abandon the Manchu lifestyle' (Bajektarevic et al. 2017: 40–44). What the khans meant here by 'Manchu lifestyle' can best be understood as the lifestyle of their Jurchen ancestors, and *not*, as I will explain below, as the lifestyle of *all* Manchus, which besides those of Jurchen heritage also included the rest of the multi-ethnic military, including their families and personnel.

In 1589, in the border area with Korea, Jurchen armies led by chieftain Nurhaci had incorporated the majority of the neighboring Jurchen clans and tribes into their own ranks. This power block formed the basis for what his successors started to label ‘Manchu.’ More than merely a ‘secondary ethnonym’ (Janhunen 1996: 99), ‘Manchu’ would become the way to refer to all people who were attached to the military banner people (Elliott 2001). The court had to deal with a constant influx of other peoples, following Nurhaci’s successful strategies in trade (Di Cosmo 2010), diplomacy (Di Cosmo 2007), and conquest (Swope 2014). The initial consolidated union of Jurchens expanded not only with other Jurchen clans and tribes, but also with peoples of Mongol, Korean, and Chinese heritage. A climate of peaceful coexistence soon turned grim and became stratified, with the Manchus of Jurchen heritage enjoying a superior status (Li 2003).

When Nurhaci died in 1626, he left his nascent state with an identity crisis. Under his leadership, one Jurchen clan grew into a very complex society within decades. Having had several temporary and moving capitals, there was now a new, fixed capital in Shenyang, with palaces, state bureaucracy, and ceremonies. However, when, in 1635 (that is, on the eve of the declaration of the Daiqing), Nurhaci’s son and heir, Hong Taiji, made the term ‘Manchu’[14] official, one that was still submitting and taking in new people, who all received the label ‘Manchu’ as a synonym for ‘becoming part of the military society,’ but which differed from becoming part of the Jurchen heritage. It is here that the court found itself challenged: in order to strengthen the weak ties, they needed to impose an official narrative upon which all their subjects would establish and glorify the Manchu imperial lineage. *Ex nihil not fit*, or, in other words, a lineage comes with a geography, and that geography had to be stressed as the Manchu common grounds.

3.2 Finding Manchu Common Grounds

The challenge of strengthening the concept of the Manchu common grounds led to Elhe Taifin glorifying the areas northeast of the Great Wall, especially those areas that surrounded the ancestral tombs, and the *Xanggiyan Alin*, or White Mountains, on the border with Korea (cf. Elliott 2000; Whiteman 2013). To this area, and to this end, Elhe Taifin made several epic travels, setting out from his palaces in Beijing. From his own observations, as well as those of his contemporaries, it becomes clear that the Daiqing court was starting to exert a stronger claim on these lands as being the common grounds of the Manchus, in the literal, spatial sense, but

[14]See Stary (1999: 115). He convincingly argues that *Manju* ‘is a general Tungus word, already existing in ancient times and expressing the concept of growth, greatness, strength and power’. This fits the adoption of the word during Nurhaci’s rise of power.

also figuratively, as a shared narrative for *all* Manchu banner people, around which they would be able to build a shared identity.

In letters to his grandmother, we observe Elhe Taifin's deep admiration and nostalgia for everything outside of the Wall (Stary 1996). Arriving in Shenyang, the city where his grandfather, Hong Taiji, declared the Daiqing in 1636, on April 7th, during his tour of 1682, Elhe Taifin wrote that it was the place where 'the beginning of our ancestors' great rule has been established, and where fortune has been left to sons and grandsons'.[15] Near the Eternal Tombs, the burial complex of Nurhaci's ancestors north of Hetu Ala,[16] the khan, on April 20th, praised it as 'the august region where the power of kings came to flourish.'[17] The pinnacle of this tour was when he dismounted at the Ula, where he arrived on May 3rd. There, he looked 'towards the famous mountains,'[18] that is the White Mountains, the 'august place where the fortune of the ancestors began.'[19] As one of his officials, Gao Shiqi, recorded in the preface to his travelogue: 'he wanted to see more of the frontier, to explore the land and inspect the areas of victories, where his ancestors fought hard to establish their power'[20] (Gao 1684).

3.3 *Mapping Manchu Common Grounds*[21]

The above demonstrates not only the amount of attention that these areas received from the court, but also the knowledge of its geography. Cams (2017: 45) summarizes the *communis opinio*: '[h]istorians see these tours, following decades focused on conquering the Chinese provinces, as an effort to refocus his attention on the Manchu homelands, showcasing his authority over them.' Yet another conclusion that I would propose, on the basis of 'the Manchu problem,' is that Elhe Taifin was trying to compensate for the lack of Manchu unity within his banners, something that must have been more in the foreground when there was no war, intervals in which the already malnourished identity of the banners lacked stimuli. In any case, the choice to plan the first surveys for the *Overview Maps* on the Manchu common grounds, along and outside of the Wall, was no coincidence.

Between 1709 and 1712, four survey expeditions took place (Cams 2017: 111–122), executed by teams of mapmakers, consisting of Europeans and Manchus. They mapped the Daiqing-Korean borderlands and the Daiqing-Russian Amur

[15]mafari i amba doro be fukjin ilibufi. juse omosi de hvturi be tutabuhangge. From Stary (1996: 369).

[16]Figure 2: blue pin. Yenden, or Xinbin 新濱.

[17]wang ni doro be yendebuhe ten i ba inu. From Stary (1996: 371).

[18]gebungge alin i baru tuwame (*Ibid*: 373).

[19]golmin xanggiyan alin serengge. mafari i hvturi be neihe ujen ba (*Ibid*).

[20]欲巡視邊疆遠覽形勝省睹祖宗開創之艱難. Retrieved from CTEXT.

[21]This subsection leans heavily on Mario Cams' *Companions in Geography* (2017).

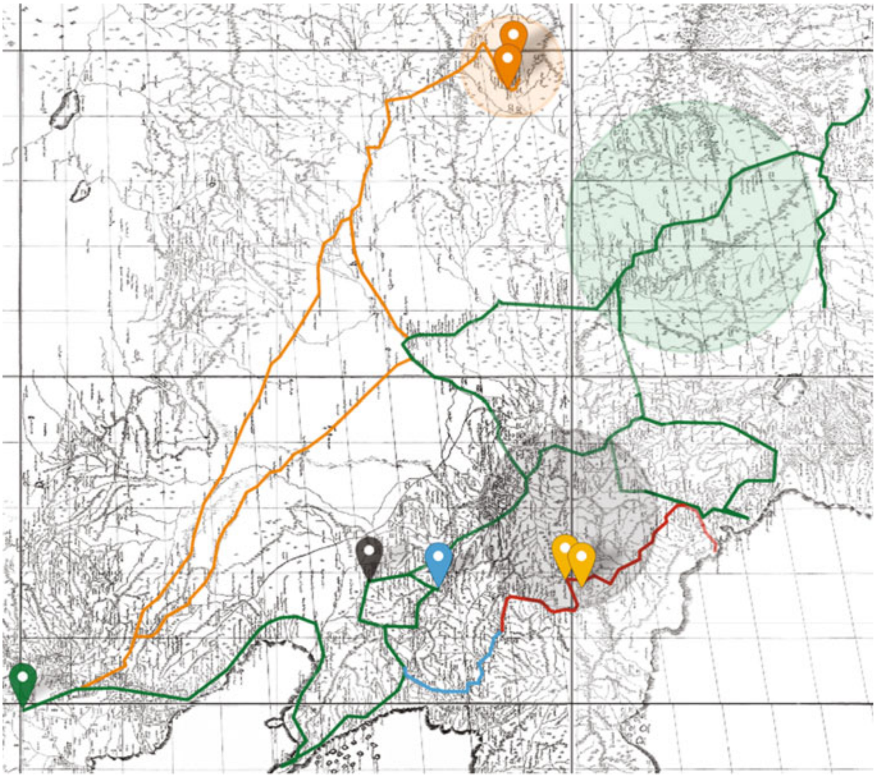

Fig. 2 Details of the Manchu common grounds on the 1719 overview maps. Lines correspond with surveying routes (1709–1712), pins with historic Manchu capitals, circles with points of interest in the Manchu origin narrative (from bit.ly/hyqlt)

borderlands. As becomes clear from Fig. 2, the surveys left large areas uncovered. It was rather a route-based survey occurring in several stages. The 1709 expedition surveyed from the Great Wall to Shenyang via Jilin, Ningguta and the lower Amur (Fig. 2, green line). The expedition was followed by the 1710 mapping of the New Amur garrisons, proceeding from the Great Wall to Mergen and Sahaliyan Hoton (*ibid*, orange line). The Korean borders were mapped during two subsequent missions: the first in 1711 surveyed the Yalu river up to Manpo (*ibid*, blue line), the second took place in 1712, measuring the Yalu river, the White Mountains and Tumen river (*ibid*, red line).

These surveys targeted two important border regions: those with the Russian empire, even after the treaty of Nerchinsk of 1689 (Zatsepine 2007), and those with the tributary state of Chosŏn Korea (Schmidt 2007). The 1710 survey of the new garrisons was in large part a repeat of the work of a team sent by the khan in 1684 to survey outside of the Wall up to the Amur River in order to establish new horse relay stations in the face of Russian expansion in the region. Both expeditions, as we shall see, recorded places that are, in the context of the origin narrative, of direct interest. Of special interest in the context of demonstrating Manchu origins along the Daiqing-Korean borders were the White Mountains (*Ibid*, grey circle). These mountains had an important spiritual and mythical, but also geographical meaning for both the Koreans and the Manchus, with their borders running through these mountains along the Yalu and Tumen rivers (Nelson 1993: 5–6). Now that it has become clear how fragile the Manchu identity was at the time of Elhe Taifin and, as a consequence, how important the strengthening of a common Manchu space and past was, the next section will explore how, if at all, this may have found its way onto the Overview Maps.

4 Myth and Map

Over the years, recognizing its importance, the narrative surrounding Manchu origins has received broad scholarly treatment.[22] Lin Sun closely follows the different versions of this narrative in one of her studies, from its earliest attestation in the Draft Chronicles of 1635, to the versions of Abkai Wehiyehe of 1736 and 1739. Sun places it within the purview of the issue of identity formation among the Manchus. The article concludes, concurring with Crossley,[23] that it is 'irrelevant to discuss whether the Manchu origin myth is true or not because its purpose is "not to bring science to Manchu origins, but authority"' (*ibid*), further emphasizing that the myth gives 'insight into how the Manchus saw themselves, their empire, their ancestors and their mission at various stages of their history, but not their origin' (*ibid*).

The challenge of the court, at least in theory, lies exactly in the compromise between bringing accuracy and authority to the geography of Manchu origins in the Overview Maps. After all, any narrative on origins, roots, and lineage is bound to be geographically anchored, and the Manchu origin narrative, as promulgated by the Daiqing court, is no exception. Following a thematic approach, the subsections below will trace the Daiqing narrative of the Manchu origins on the Overview Maps. The goal is to explore how the map (dis)locates the points that are mentioned in the origin narrative. Avoiding a repetition of earlier treatments (cf. note 20 and Sun 2017), I will limit the discussion to the parts that I need to address our main question, that is: to what extent did the Elhe Taifin court commit to a cartographically more accurate presentation of the areas that fell under their own rule?

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[22] From the perspective of orality; e.g. Durrant (1978); etymology Si (1987); versions comparison e.g. Jun (1988), Stary (1982), Zhang (2000), Sun and Song (2012); historiography e.g. Crossley (1987, 2002), Elliott (2000). Cf. Sun (2017) for additional references.

[23] In-quote citation of Crossley (1987: 781).

4.1 Bathing

A story that is present in all known versions and editions of the Manchu origin narrative is the story of the 'three heavenly maidens',[24] who descended from the sky to bathe.[25] Its first attestation we find in the Manchu, handwritten Draft Chronicles (*Manwen Yuandang* 滿文原檔) of 1635,[26] where the story about the bathing maidens and the birth of the primogenitor, Bukvri Yongxon, is related by an outsider to the court, a non-Manchu official of Hvrha heritage:

> My ancestors had for generations lived by lake Bulhuri at the foot of Mount Bukori. Though there are no records, an old legend tells that when three heavenly maidens, Enggulen, Jenggulen, and Fekulen, came to that lake to bathe, Fekulen, the youngest sister, found a red fruit brought by a sacred magpie. The legend further says that when she tried to hold it in her mouth, it happened to drop into her throat, and becoming pregnant, she gave birth to Bokori Yongxon. His descendants make up the Manchu land.[27]

The narrator, named Muksike, was brought to the Mukden court the year after khan Hong Taiji had sent out a mission in the winter of 1634 to submit more people into the Manchu banners. The Draft Chronicles explains that Muksike came to court in the summer of 1635 'on the occasion of the audience granted to the high-ranking vassals who had participated in the expedition to the Hvrha kingdom in the region along the Sahaliyan ula (the Amur) and to the leaders and civilians who had submitted and been brought to the capital' (Matsumura 1988: 18). There, after a banquet in the palaces, Muksike related the myth of the bathing maidens.

It is this story that became part of the core of the official Daiqing origin narrative. Seeing that the court scribes recorded the narrative in the day-to-day records of the Draft Chronicles and that it, a step further in the editing process, became marked with the imperative '*ara*' ('copy!'), meant that this story was selected to end up in official Daiqing historiography. And, indeed, one finds the myth opening the official

[24]The 'abkai ilan sargan jui'. This narrative comes in similar, and earlier forms (e.g. Lee 1975 Songs of Flying Dragons. pp. 102–23) and parallel versions (e.g. Lattimore's 1933 The Gold Tribe: 'Fishskin Tatars' of the Lower Sungari).

[25]Variations of this myth are widespread. For example, Koguryô Chumong myth also has a bathing scene with three sisters, one of which is impregnated and gives birth to an egg out of which Chumong is born. I am indebted to Andrew Miles Logie for pointing this version out to me.

[26]Rawski (1998: 73, 314n59) refers Tong Wanglun in claiming that the first attestation of the three maidens myth in the *Draft Chronicles* of 1612. Rawski's reference leads to a dead end. Searching the 1612 chronicles myself, I was not able to find any attestation of the narrative.

[27](Transliteration of the original frmrz.me/e/65/frhlphzcjfl3 from Feng Mingzhu and Chen Longgui (ed) 2005: Tere mudan i cooha de dahabufi gajiha muksike gebungge niyalma alame mini mafa ama jalan halame bukvri alin i dade bulhori omode banjiha meni bade bithe dangse akv julgei banjiha be ulan ulan i gisureme jihengge tere bulhori omode abkai ilan sargan jui enggvlen jenggvlen fekvlen ebixeme jifi enduri saksaha benjihe fulgiyan tubihe be fiyanggv sargan jui fekvlen bahafi anggade axufi bilgade dosifi beye de ofi bukuri yungxun be banjiha terei hvnqihin manju gurun inu. tere bulhori omo xurdeme tanggv ba helung giyang qi emu tanggv orin gvsin ba bi minde juwe jui banjiha manggi tere bulhori omoqi gurime genefi shaliyan ulai narhvn gebungge bade tehe bihe seme alaha …

history of 1655, the Veritable Records of the khan Fulin (Shunzhi), the first Manchu khan following the conquest of China. The fact that it was related by an outsider was omitted. One possible explanation, given by Stephen Durrant on the basis of the discrepancies in structure between the *Veritable Records* version and the one related by Muksike (Durrant 1978), was that the (soon to be Manchu) Jurchen court recognized this Hvrha official's story as part of their own folklore. This is not unlikely, since the Hvrha were culturally and linguistically closely related to the Jurchen-Manchu court.

The fact that the court copied this narrative as its own may have another reason. According to the Draft Chronicles, Muksike closes the myth with 'His descendants make up the Manchu land.'[28] For the court, claiming this narrative is thus justifiable. Muksike, after all, speaks of 'their' Manchu land (*manju gurun*). And, while this is not the place to fully scrutinize the socio-historical usage and etymology of *manju* (cf. Stary 1999), I would like to consider a possible miscommunication between Muksike and his Daiqing audience. Cincius, known for her extensive contributions to Tungus etymology, demonstrates that *Manju* was used by various Tungus peoples (to which the Jurchen-Manchus belonged) as a hydronym, to refer to the Amur (Cincius 1949: 239; cf. Stary 1999: 112). Thus, while Muksike could have used 'Manchu country' (*manju gurun*) to mean 'country of the Amur,' the scribes may have understood this as their already established (and, at this juncture, almost official) ethnonym 'Manchu.' Thus, although *manju* "does not mean and never meant 'Manchuria'" (Elliott 2000: 607), it did once refer to a river within the area of the Daiqing common grounds.

4.2 Bathing in the Overview Maps

According to the official Daiqing origin narrative, the three maidens went bathing to the east of Xanggiyan alin or the 'White Mountains'. In the 1655 official Daiqing historiography we read that:

> …The origins of the Manchus came forth from a lake called Bulhvri located at the foot of a mountain called Bukvri which is found on the side of the Perpetual White Mountains where the sun rises. There at Lake Bulhvri at that Mount Bukvri, three heavenly maidens came to bathe…[29]

Note here that the narrative as attested in the Draft Chronicles speaks of Lake Bulhori and Mount Bukvri, and not Bulhvri and Bukvri. The discrepancies between *o, u* and *v*[30] should, however, not worry us too much, since their vocalic quality in this context would have been very similar, but also, more importantly, the orthography of these graphemes was unstable at the time of the Draft Chronicles,

[28]terei hvnqihin manju gurun inu (*ibid*).

[29]See italic lines in note 33.

[30]Alternatively transcribed as ū (Möllendorff and Norman), ô or û (Hauer, Haenisch).

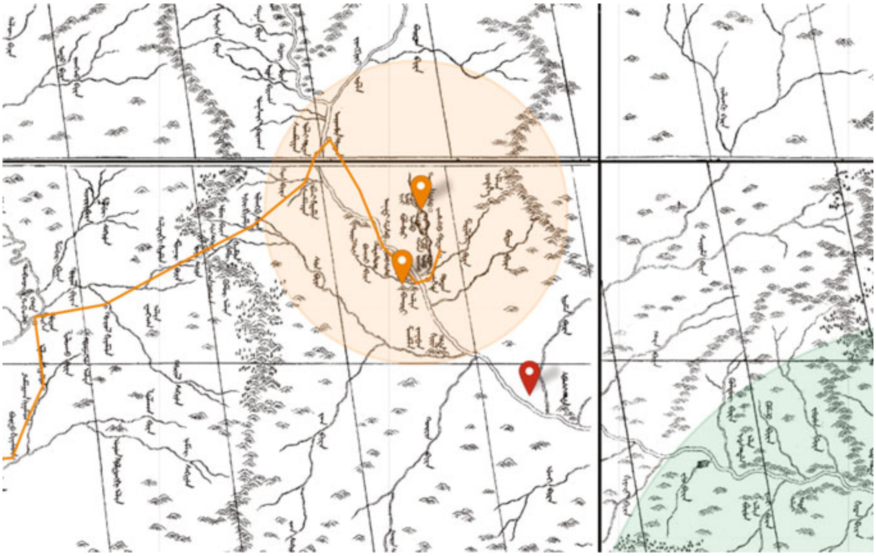

Fig. 3 Detail from Fig. 2, indicating the Sahaliyan Ula with a red marker. Lake Bolhori and Mount Bokori are indicated with the upper and lower orange markers, respectively, found along the 1710 survey route shown by the orange circle (from bit.ly/hyqlt)

something that the editors of the 1655 Veritable Records must have taken into account, together with the dialect differences between the Jurchen at court and the affiliated, but linguistically distinct, Hvrha (Benzing 1955: 24–5).

Searching on the Overview Maps in the area 'on the side of the Perpetual White Mountains where the sun rises,' I found no birthplace of the progenitor of the Manchus, Bukvri Yongxon (his name bearing the name of the mountain, or the other way around). Searching for other non-official descriptions was also to no avail. For example, Elhe Taifin's trusted tutor, the Flemish Jesuit Ferdinand Verbiest, suggests in a letter, written after his 1682 tour of the area in the imperial entourage: 'the front or the foot of the Mountain is the first ancestral root of our Eastern Tartars' (Verbiest 1682: 189).[31] However, Lake Bulhvri and Mount Bukvri did find their way onto the *Overview Maps*. For this we have to return to Muksike.

Sun quotes Crossley as saying that the goal of the myth was 'not to bring science to Manchu origins, but authority' (1987: 781), thus one could argue that the identity of the narrator became irrelevant the moment the Daiqing court claimed the myth. In finding the mountain and the lake, however, the origin of this narrator and the attestation of his story in the Draft Chronicles appears to be all the more important. Muksike, who was brought to the court after the expedition to the Hvrha kingdom

[31]Het voorste of voet van den Berg, is de eerste en Voorvadersche wortel van onze Ooster Tartaren.

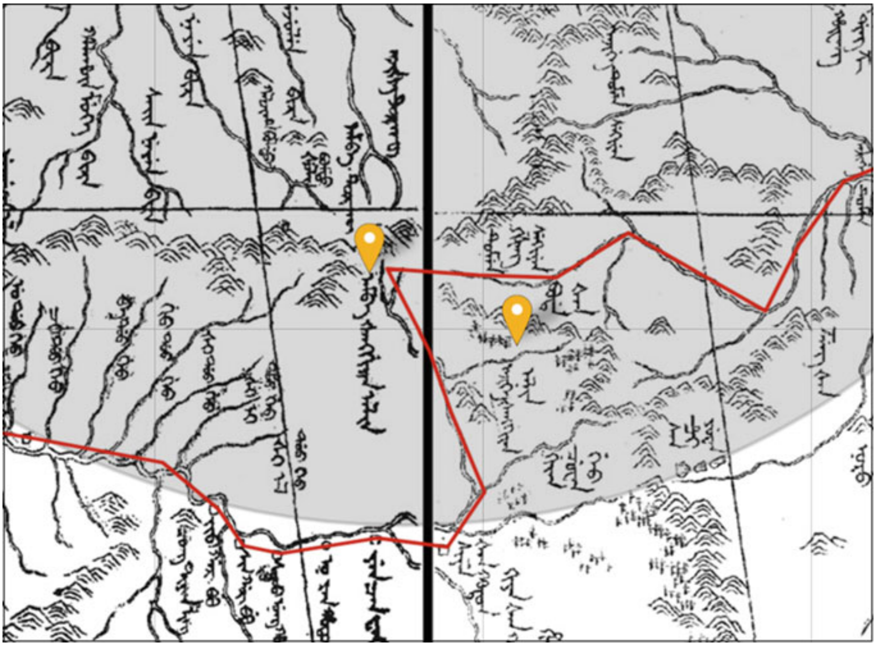

Fig. 4 Detail from Fig. 2, the upper and lower pins mark the *Amba xanggiyan alin* or Great White Mountain and the *Ajige xanggiyan alin* or the Little White Mountain. The red line marks the 1712 survey of the Daiqing-Korean borders (from bit.ly/hyqlt)

in the region along the Amur (Sahaliyan Ula), did not refer to the White Mountains at all. We have already learned that Muksike's 'ancestors had for generations lived by Lake Bulhori at the foot of Mount Bukvri.' In addition, after he is done relating the myth, he shares the following information (Fig. 3):

> Lake Bolhuri measures a hundred *ba*[32] in circumference and is one hundred and twenty or thirty *ba*[33] from the Heilongjiang. After I begot two sons I moved away from lake Bulhuri and have been living at Narhvn by the Sahaliyan Ula.[34]

Following this lead, I located the Hvrha kingdom with the Amur running through it (see Fig. 4). Following the river upstream from the centre of the Hvrha kingdom, we find both Mount Bokori and Lake Bolhori on the Overview Maps (see my previous note on the discrepancies in spelling). Thus, the geographical knowledge of the fact that the bathing scene in Muksike's narrative was not situated to the east of the White Mountains was already readily available to the Elhe Taifin court, as the Overview Maps clearly demonstrates.

[32]ca. 6 km.

[33]ca. 8 km.

[34]Text in italics in note 27.

4.3 The White Mountains and Lake Tamun

In all versions of the Daiqing origin myth, including the versions recorded during the 21st century (Li 2012), scenery plays an important role. In the 1655 official Daiqing historiography we find the first attestation of this area:

> The height of the Perpetual White Mountains was 200 *ba*, with a circumference of a 1000 *ba*. On the top of the mountain there was a lake named Tamun, and its circumference was 80 *ba*. The Yalu River, Hvntung River, and Aihu River all originated from this lake. The Yalu River flowed westwards from the south of the mountain to the south sea of Liaodong. The Hvntung River flowed from the north of the mountain to the North Sea. The Aihu River flowed eastward. The three rivers were full of pearls. The wind on the mountain was strong, and the air was cold. Every summer, animals find rest on the mountain. It is the mountain that is entirely made up out of limestone.[35]

The White Mountains provide the epic backdrop to the story of the three maidens. As a way of stressing the sacredness of the mountain and the lake, the records give them hyperbolic dimensions: the mountain with a height of ca. 120 km and a circumference of ca. 600 km, and Lake Tamun with a circumference of ca. 50 km.

Although Muksike's account in the handwritten Draft Chronicles of 1635 did not mention the White Mountains at all, the khan was very much aware of the importance of this area and its potential as a marker of Manchu identity, not only because of its presence in the main narrative in the 1655 Veritable Records, but also because of the attestations of the Mountains in the written history (translated into Manchu in the course of the 1630s and 40s) of their ancestors of the Jurchen Aisin (Jin 金 1115–1223), as well as in those of their inner Asian neighbors of the Khitan Liao (Liao 遼 907–1125) and the Mongol Daiyuwan (Yuan 元 1271–1368).[36] What became official Daiqing historiography from 1655 onwards, then, is a conflation of

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[35]Transcription from Matsumura Jun via translation Aɣula (2002: 23–5): golmin xanggiyan alin den juwe tanggv ba, xurdeme minggan ba, tere alin i ninggu de tamun i gebungge omo bi, xurdeme jakvnju ba, tere alin qi tuqikengge yalu, hvntung, aihusere ilan giyang, yalu giyan alin i julergiqi tuqifi wasihvn eyefi, liyoodung ni julergi mederi de dosikabi, hvntung giyang alin i amargiqi tuqifi amasi eyefi, amargi de dosikabi, aihu bira wesihun eyefi, dergi mederi de dosikabi, ere ilan giyang de boobai tana, genggiyen niquhe tuqimbi, xanggiyan alin edun mangga, ba xahvrun ofi, juwari erin oho manggi, xurdeme alin i gurgu gemu xanggiyan alin de genefi bimbi, xun dekdere ergi ufuhu wehe noho xanggiyan alin tere inu. *manju gurun i da, golmin xangiyan alin i xun dekdere ergi bukvri gebungge alin, bulhvri gebungge omoqi tuqike, tere bukvri alin i bade bisire bulhvri omo de abkai sargan jui enggulen, jenggulen, fekulen ilan nofi ebixeme jifi* muke qi tuqifi etuku etuki sere de, fiyanggv sargan jui etukui dele enduri saksaha i sindaha fulgiyan tubihe be bahafi, na de sindaqi hairame angga be axufi etuku eture de, axuka tubihe bilha de xuwe dosifi, gaitai andande beye de ofi, wesihun geneqi ojorakv hendume, mini beye kuxun ohobi, adarame tutara sehe manggi, juwe eyun hendume, muse lingdan okto jekebihe, buqere kooli akv, sinde fulingga bifi kuxun ohobidere, beye weihuken oho manggi, jio seme hendufi genehe, fekulen tereqi uthai haha jui banjiha, abka i fulinggai banjibuha jui ofi uthai gisurembi…

[36]The Manchu court translations should be seen as a selections of the Chinese original texts, and it would be interesting to see to in what extent the translations about the White Mountain align with the Daiqing sources (Fuchs 1936).

the Muksike's story on the bathing maidens and the description of the sacred White Mountains, staging the bathing to the 'side of the perpetual White Mountains where the sun rises.'

When it came to the worship of the area of the White Mountains, khan Elhe Taifin took no half measures. In 1677, khan Elhe Taifin, after having himself toured through northern Mukden and southwest Jilin in 1671 (Elliott 2000), sent an expedition led by Umuna (d. 1690) to the White Mountains, tasked with finding the hitherto unknown exact locations of the lakes and the mountains that formed the backdrop of the Manchu origin narrative (cf. Fang 1697 and Manzhou Yuanliu kao Vol. 14). A travelogue written by one of its team members, Yang Bin, reports that, arriving at the foot of the White Mountains, the team 'knelt down before the mountain and chanted a prayer. The moment we were done, the fog cleared and the Perpetual White Mountains leapt up vividly before us.'[37] (Yang 1707). Upon their return, the khan incorporated the area into the highest sacrificial rituals of the Daiqing court.

4.3.1 The White Mountains and Lake Tamun in the Overview Maps

In mentioning the area, all Daiqing court records speak of, without any exceptions, the Golmin xanggiyan alin (with *xanyan* being an alternative written form of *xanggiyan*, mainly used from the reign of Abkai Wehiyehe, r. 1735–1796). *Xanggiyan alin* means 'White Mountains,' presumably referring to the snow on their summits. *Golmin* represents a double layer of meaning, translatable as 'Vast' or 'Perpetual.' Turning to the Overview Maps, one sees Xanggiyan alin divided into the *amba* and the *ajige* Xanggiyan alin, the 'Great' and the 'Small' White Mountains (Fig. 5). No attributive *golmin* is found on the map. One could argue that the 'Small' and the 'Great' *xanggiyan alin*, taken together, form the *golmin* 'Vast' White Mountains, but the fact remains that the Overview Maps do not corroborate the official narrative of the court, nor how the Manchus were discussed by the Manchu subjects.[38]

The crater lake on the summit of the White Mountains, Lake Tamun, is missing on the Overview Maps. Regarding this lake, the court narrative states that it measures ca. 50 km in circumference, and that the Yalu River, Hvntung River, and Aihu River all originated from the lake. Lake Tamun is absent, despite its inherent presence in the Daiqing origin narrative, its mentions in the Aisin, Liao, and the Daiyuwan histories, and its prominent depiction in the Veritable Records in the

[37]近前跪誦綸音禮拜甫畢云霧開散長白山歷歷分明臣等不勝駭異. (Via CTEXT).

[38]Page from the Manchu work *Golmin xanyan alin i ejetun*. Chang-bai-shan zhi 長白山誌 (1785), a historical, geographical work on the area of the White Mountains. The work is appended by a glossary. Fifth lemma is Changbaishan 長白山 translated as *Golmin Xanyan Alin*.

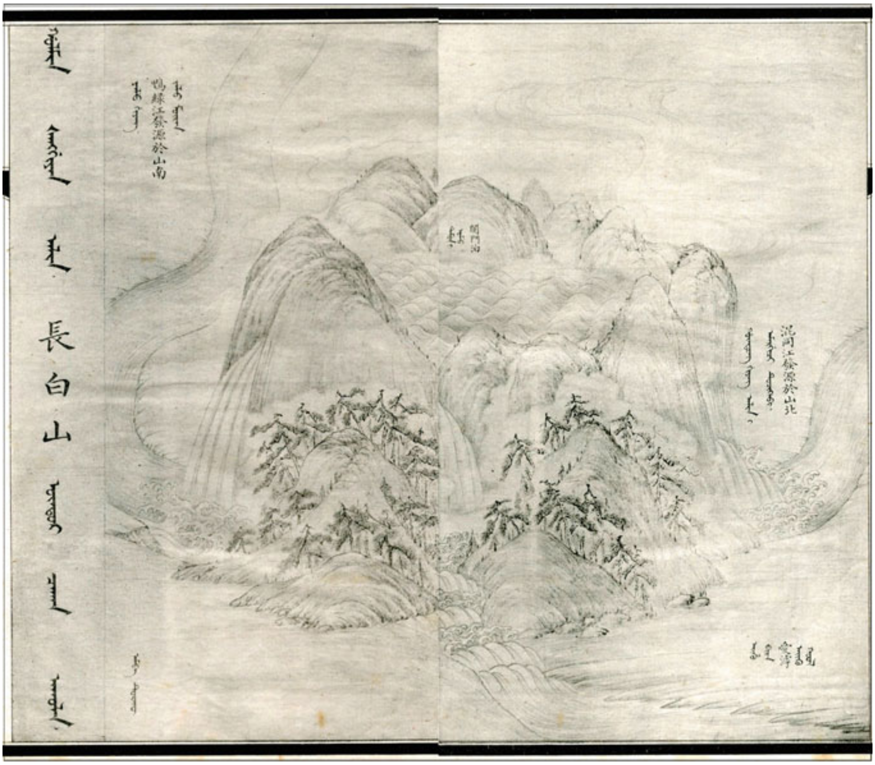

Fig. 5 Image of Lake Tamun, lying amidst the *golmin xanggiyan alin.* The image is a scan from the facsimiles edition of the *Manzhou shilu* 滿洲實錄 (1930)

trilingual Abkai Wehiyehe version (Fig. 5). The drawings in this version are said to stem from a 1635 (lost) edition (Matsumura 1988: 2), making the absence in the Elhe Taifin Overview Maps even more interesting. Moreover, during the survey of 1711, Lake Tamun did come up in the negotiations with Chosŏn Korea. When Mukedeng, who was in charge of the mission, inquired after the borders, his Korean partners reluctant reaction was: 'We have not seen it with our own eyes, however there is a great lake in the Changbai mountains, from which the Yalu river flows west and the Tumen river runs east. To the south of that great lake is our national land.' (Schmidt 2007: 144). But here, too, all knowledge was based on hearsay.[39]

[39]Schmidt's translation of *Chosŏn wangjo sillok, Sukchong sillok* 51: 22a,b.

5 Concluding Remarks

I have explored to what extent the narrative on Manchu court origins, and by association the origins of all Manchu subjects within the banners, is represented on the printed *Overview Maps* of 1719. Although limited in scope, I believe that this has demonstrated how the scrutiny of geographically anchored court narratives on the canvas of a court map can help our understanding of the relationship between statecraft and cartography, or broader in our case, between the Daiqing agendas of cartographic accuracy and identity formation.

The Overview Maps were one of the best opportunities for Elhe Taifin to represent both his imperial space, as well as to demythicize the geography of the Manchu origins, as a way to promote the formation of a unique Manchu identity. As is evidenced here, the Overview Maps did not introduce the canonical name of the White Mountains (Golmin xanggiyan alin) to the map nor with Lake Tamun, on the summit of the White Mountains. Also, the Overview Maps do not situate the geography of the bathing maidens and the birth of the Manchu primogenitor Bukvri Yongxon in the area to the east of the White Mountains, which would align it with the official Daiqing narrative. Connected to this, the Overview Maps did not omit the non-canonical location of the mountain and the lake where ‘their’ progenitor was born.

On the basis of this single (but, for the Manchus, crucial) case study, I am inclined to conclude that the khan Elhe Taifin did not intervene in the actual content of the Overview Maps. Taking Elhe Taifin’s remarks on his use of the ‘vermillion brush’ during the final editing stage (‘I examined and corrected each entry’) of the Imperially Composed Mirror of the Manchu Language at face value, as well as other examples of the ‘not merely honorific’ interpretation of the concept of *han i araha* ‘imperially composed’ in titles, and also taking into consideration other instances where the khan is seen micro-managing his empire—this all suggests that the khan did not busy himself with the content of the Overview Maps, not even making an effort to align the Overview Maps with the, for him, crucial narrative of the Manchu origins.

Not editing does not mean, however, that Elhe Taifin attached no value to the surveying project, because he did. Other than concerning the actual content, there were plenty of moments where the khan intervened in the Overview Maps. For instance, during the measuring of the Great Wall in October 1708, one of his Jesuits, Bouvet, fell ‘ill’. Elhe Taifin’s reaction was fierce: ‘From the beginning, Bouvet did not want to go. If he seems to be in normal health, then he has faked his illness in order to return. If he recovered after his return, then, being a missionary, acting in such an undignified way can be called excessive. If he would have returned by himself the day he recovered, he could have been forgiven, even though his crime would have been severe’ (Cams 2017: 94).

Seeing that the project management side *did* receive the court’s attention, then what does its non-involvement in the Overview Maps’ content mean? Although no definite answer can be given at this point, I would like to put forward a few

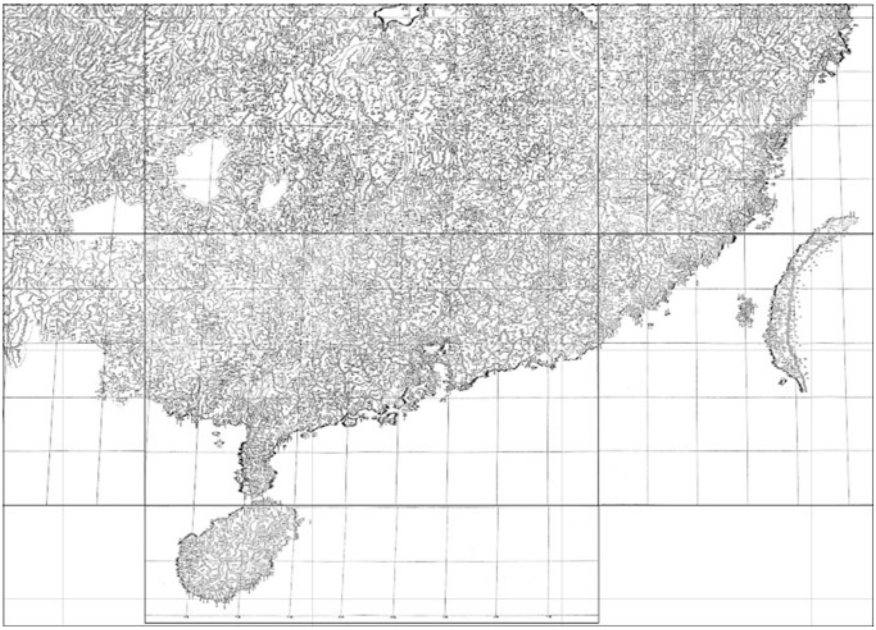

Fig. 6 Blank space (Miao areas and coastline of Taiwan) indicating that the surveyors had no access to these areas, because of their violent populations

possibilities. First, one could argue that the Elhe Taifin court's main interest was in having an accurate representation of its own imperial space on the *Overview Maps*. I add 'own' since it seems that the court switched from a policy of accuracy in the case of the areas that fell under, or within, its own jurisdiction (e.g. Fig. 8) to a more propagandistic, or at least unrealistic, agenda (tailored to their image to the outsider?) in the areas outside of their direct influence (e.g. Fig. 3).

Second, because of the (theoretical) palace secrecy surrounding the final product, Elhe Taifin might have stayed out of the process of content editing, trusting his surveyors to do the job. In this case, the function of the Overview Maps should perhaps primarily be seen in the context of a 'potent tool of statecraft,' which Elhe Taifin used to aid in military, governmental and political matters. If this holds water, then Elhe Taifin may, indeed, not have been interested in the representation of the mythical sides of the Manchu origins. This does not mean, however, as I have tried to demonstrate, that Elhe Taifin remained aloof in other matters where the court could enforce the official version on of Manchu origins.

Finally, there is the absence of Lake Tamun. My first thought was that this constituted convincing evidence that Elhe Taifin kept his editorial brush in his drawers. I now, however, see its absence as a clue that Elhe Taifin encouraged the surveyors to attempt cartographic accuracy within his Daiqing territories: all attestations of Lake Tamun come from sources outside of the Daiqing surveyor teams, some from works of history, and some from Korean envoys. In other words, they had not been to (or found) the lake, and therefore kept it out of the content of the Overview Maps. By way of comparison, although done by a different team, other areas on the Overview Maps, where surveyors were unable to work, were left blank. One example is the dangerous areas of the Miao people in the southwest of the empire (see Fig. 6). This suggests that Elhe Taifin, in or within the areas under Daiqing control, did not find it opportune to show things that one could not measure.

6 Outro

Elhe Taifin's Overview Maps formed the basis for editions produced by his son, Hvwaliyasun Tob (Yongzheng, r.1722–1735), and grandson, Abkai Wehiyehe (Qianlong, r.1735–1796). In reference to James Millward's statement on the mapping of the northwest by Abkai Wehiyehe, Seonmin Kim surmises that 'it was the [Abkai Wehiyehe] map that completed the process of Qing empire building' (2017: 52). I am interested to learn whether the dynamics of intervention in the content of the Overview Maps evolved from one khan to the other. Although their editions of the Overview Maps deserve full treatment in the future (as do those produced under Elhe Taifin), I would like to end by taking a first look at the areas that meant something in the Daiqing origin narrative in one version by Elhe Taifin's son, and one by his grandson.

Looking at these places in the Hvwaliyasun Tob version, albeit being very different in design (one reason being that is was a woodblock print instead of a copperplate print), it shows that one did not alter the representation of the toponyms that were in competition with the official court version of the Manchu origin narrative: still no Lake Tamun, still no *Golmin xanggiyan alin,* etc. But turning to an edition commissioned by Elhe Taifin's grandson, Abkai Wehiyehe, gives us reason to believe that somewhere along the way, the court did pick up on the mal-representation of their Manchu common grounds and felt compelled to intervene.

We know that when, in the mid-eighteenth century, Khan Abkai Wehiyehe came to power, the stories of the White Mountains and the birth of the progenitor out of a red berry were widely known, and heavily imposed upon the whole Manchu banner population. In his famous Ode to Mukden, earning compliments of no less than Voltaire, the khan begins with verses describing the magical mist of the Perpetual White Mountains, from there proceeding to the myth of the maidens and the berry. He situates the myth right within the ridges of the White Mountains, without mentioning Mount Bukvri and Lake Bulhvri in the verses: 'In the beginning, our Great Qing dynasty arose from origins in the Long White Mountains. Marvelous

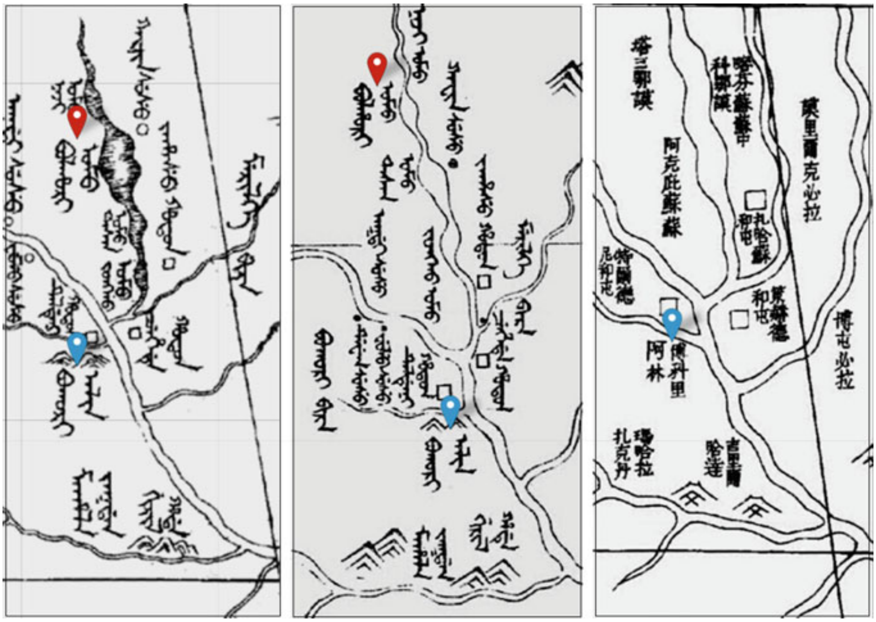

Fig. 7 From left to right: the Elhe Taifin edition, the Hvwaliyasun Tob edition, and the Abkai Wehiyehe Edition. Mount Bokori is marked in blue, Lake Bolhori in red (missing in the last edition) (from bit.ly/hyqlt)

humors there gathered-it was a most resplendent and auspicious place.'[40] A first look in Abkai Wehiyehe's Overview Maps shows one undeniable omission: there is no lake Bulhvri; it is not where it used to be and is not to the east of the White Mountains (Fig. 7).

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[40]He did, however, mention both the lake and the mountain by name in his commentary, which was not available to the public.

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Mapmakers in China and Europe 1800–1844: The Perspective of William Huttmann, Royal Geographical Society

Ines Eben von Racknitz

Abstract From the late 1700s until 1880, no official or comprehensive map based on first-hand surveys of China was created in Europe. In Qing China (1644–1911) as well, cartographers relied on the Kangxi Atlas maps until the 1860s and 1870s. These were based on exploratory surveys and created with the consultancy of Jesuit mathematicians, and had been revised and augmented several times by the Yongzheng (r. 1722–1735) and Qianlong (r. 1735–1796) emperors. Following the signing of the Treaty of Nanjing in 1842, the Royal Geographical Society in London asked the geographer William Huttmann to recommend cartographic works from which to compile a new and updated map. This paper analyses Huttmann's recommendations, placing them into the cartographic context of 1844, in order to investigate the cartographic and geographic situation in-between the large surveys undertaken during the imperial age of the eighteenth century and the colonial age at the end of the nineteenth century. As a foundation for a new map, Huttmann recommended maps of Qing cartographers to be taken as a basis, as well as the survey maps produced during the Kangxi era with the consultancy and co-authorship of Jesuit missionaries. The information provided therein was to be supplemented by reports of individual travelers. Huttmann does not mention and recommend the maps of the smaller, newly evolving geographic societies and institutions in Europe, which continued to develop scientific cartographies, but which did not include new first-hand materials.

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1 Introduction

The China War of 1860, last chapter of the Second Opium War (1856–1860) and particularly the British and French expeditions against Beijing in early fall of that year, saw 17,000 troops, among them Sikhs and Chinese coolies from Hong Kong, marching towards the Chinese capital.[1] One rather significant problem became quickly evident: this particular area of Northern China— the area between the Dagu 大沽 forts at the coast and Tianjin and Beijing, was geographically rather under-explored and no detailed maps of the area existed.[2] The problem was solved on the spot partly by asking locals in the Tianjin area for the proper way to Beijing, and partly by the immediate reconnaissance of the British and French engineers, who were always sent ahead in order to chart the way for the next days. Indeed, the first looting of the Yuanming Yuan 圓明園, summer residence of the Qing emperors, in early October 1860 by French troops was put down to the fact that they had lost their way and had been misdirected by a local towards the Yuanming Yuan (Chen 1984: 166).

European ignorance of Northern Chinese geography was a result of political relations. For 44 years, since the failed Amherst mission in 1816, the North of China had been closed off to Europeans.[3] The five trading ports opened to foreign, mainly British, trade after the first opium war in 1842 were located in Shanghai and further south towards the coast of Guangzhou. For ventures in the North, the expedition of 1860 (as well as the failed Amherst mission in 1816) had to rely on maps that had been modeled after a Qing atlas from 1760 (Eben von Racknitz 2012: 143).

The maps in this atlas had been created after extensive, decade-long survey expeditions in the Qing empire, and been executed cooperatively by Qing cartographers and Jesuit missionaries during the first half of the eighteenth century. A first woodblock print version of their findings was presented under the title of *Huangyu quanlan tu* 皇與全覽圖 (Overview maps of the Imperial Territories) to the Kangxi emperor (r. 1661–1722) in 1718. A version of this 'Kangxi atlas' as it is known in Western scholarship, reached France in 1721 and was the model for the maps published by d'Anville in 1735, accompanying a four-volume work on China prepared by the Parisian Jesuit Jean-Baptiste Du Halde (Cams 2014: 51). Published in English, German and Russian during the following decades, it found wide distribution in Europe.

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[1] I would like to thank the organizers of the fruitful symposium "Mapping Asia: Cartographic Encounters between East and West" in Leiden in September 2017 of which this paper is an outcome. I would also like to thank Mario Cams for his suggestions and Josh Stenberg for his proofreading.

[2] The China expedition of 1860 and the looting and the burning of the Yuanming Yuan are described in detail in my book (Eben von Racknitz 2012). A map of the Dagu forts and the march of the troops towards Beijing was later published in: Dépôt de la Guerre: 1865, and in Loch (1900).

[3] The Amherst mission is still largely underexplored, but Gao (2016: 595–614) provides an introduction.

Indeed, in Europe, since the late 1700s, no 'official' or comprehensive map of China, based on new actual geographical surveys, would be created until new materials became accessible in the 1870s. In China, cartographers relied on the maps of the Kangxi Atlas until the 1860s and 1870s. These maps had been revised and augmented several times at the request of the Yongzheng (1722–1735) and Qianlong (1735–1796) emperors in order to include newly conquered areas. In the literature, these maps are referred to as Yongzheng atlas and Qianlong atlas respectively.[4]

After the First Opium War (1839–1842), the 1842 Treaty of Nanjing stipulated the opening of five ports along the Chinese coast for foreign trade. This produced a demand for new maps for private travelers and merchants, particularly in the British community. Thus, in 1844 the Royal Geographical Society, founded in 1830 in London, turned to the geographer and missionary William Huttmann, asking him to sketch out a history of Chinese and Qing cartography and to compile a short account of the principal maps of China and its dependencies, and to suggest the best mode of how to create an improved map of the Qing empire.[5]

Huttmann thus gave an oral presentation on this subject one evening in 1844 to the members of the Royal Geographical Society. His work is of interest insofar as it provides an inventory of cartography on the Qing empire during a time when the political and cultural relationship (among others) between the Qing empire and Europe was changing. Also, within the discipline of cartography, the early nineteenth century certainly was, at least in Europe, a phase of transformation and development. The European cartographic system and scientific methodology was still evolving and had not yet become a globally acknowledged system; rather, only identified 'islands' had been mapped with European cartographic methods (Osterhammel 2009: 133). Qing China did not yet belong to these newly mapped 'islands'; only around 1900 did new and detailed narratives, travel depictions and descriptions from all parts of China and all provinces of the empire become available, written by geographers and geologists and other natural scientists. By then, the interest in maps had shifted: in the colonial age and after 1870, maps were no longer conceived of as cultural and social representations of an empire. Rather, they were understood as objective, scientific depictions on a representative scale, that enabled the colonial official to gather exact geographic information (Lü 2016: 38).

How then, did Huttmann evaluate Chinese (Qing) and European geography and cartography, and how did he make a difference? Biographic information on the missionary and geographer William Huttmann is rather limited and it remains unclear when he was born. A brief obituary, appearing in 1845 in *The Annual Register* gives a basic overview:

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[4]Mosca (2013: 107–114) gives a very detailed account of the Qianlong court surveys and the involvement of the Jesuit missionaries.

[5]Huttmann presented the result of his survey in 1844 to the Royal Geographic Society and published it later in their Journal: Huttmann (1844: 117–127).

> In Tonbridge street; New road, Mr. William Huttman, a gentleman distinguished for his knowledge of matters relating to China and the Chinese language, formerly Secretary of the Royal Asiatic Society, and also to the Oriental Translation Fund. He had likewise for many years been a contributor to various publications of articles relating to the language, antiquities & c. of China, Japan, Thibet, Chinese territory etc. (The Annual Register 1845: 275)

Furthermore, it is known that he corresponded with Robert Morrison in 1821, and later had been discharged dishonorably from the Royal Asiatic Society in 1832.[6]

No other records of his life can be found. Also, his brief account on Chinese cartography (including Qing cartography), published in the Journal of the Royal Geographical society is not without mistakes; but there are several reasons to critically approach his 1844 report to the Royal Geographical Society as the foundation of our investigation into the question of cartographic depictions of China between 1800 and 1845. Firstly, as a former secretary of the Royal Asiatic Society, he reported neither to the military, nor to the trading companies. He was competent in the relevant languages, among them Chinese, Manchu, Mongolian and Tibetan. Secondly, as distinct from the famous armchair cartographers in Europe, who had never left Europe but who, at the beginning of the nineteenth century, would start to develop their craft in a way that would later become scientific standard, Huttmann had actually lived in China, valued Chinese and Qing cartography, and was thus able to comprehensively judge the situation. Comprehensive surveys of the kind that he introduces had been made by Jesuit missionaries, who had their own particular agendas. His client, however, the Royal Geographical Society in London, might be seen as having a relatively uncommitted perspective on the evolving discipline of cartography and geography and its state in Europe in 1844. In what follows, I will analyze the geographic works mentioned by Huttmann, placing and interpreting them in historical context.

2 Cartographic Depictions of China up to 1800

The question of whether Qing cartography was, scientifically speaking, the equal of European cartography, and the role of European Jesuit missionaries in the transmission of scientific principles, has been much debated. Joseph Needham, for example, has emphasized the fact that indigenous Chinese cartography had its own scientific roots (Needham 1959: 457–590). Cordell Yee on the other hand argues that, by focusing on the history of science in China, one tends to overlook other, what he terms, ‘traditional’ Chinese maps (Yee 1994: 170). These, however, are pictorial and not created to-scale, though accompanying texts do often contain the exact measurements.

[6] Huttmann (1821: 566–577), found in: Lehner (2004: 40). The discharge is announced in: Asiatic Journal 1832: 231.

Laura Hostetler also suggests that both types of cartography (Chinese indigenous and the Qing survey maps created with Jesuit mathematical knowledge) worked in 'tandem' and not antithetical to each other. She argues persuasively that the success of the Qing emperors in extending the empire during the early modern period (seventeenth to eighteenth century) was in part due to the ability to communicate the expansion of the empire both internationally in the emerging language of scaled maps, and at home. Therefore, maps depicting the early Qing empire are hybrid maps combining both European and Qing mapping techniques, and appealing to the elites of the Qing empire as well as Europe (Hostetler 2009: 98).

After the eighteenth century, it was generally assumed in Europe that the Qing empire's geographers were much better informed on the geography of Central Asia than their European counterparts (Osterhammel 2009: 133). Even Huttmann gives credit to their cartographic practices when he justifies his recommendation of Chinese geographical and cartographical works by a quote from d'Anville, who edited the Jesuit atlas during the 1730s: "The Chinese originals do great honour to China, and prove the superiority of the Chinese, as geographers, over every other Asiatic people" (Huttmann 1844: 118).

But which maps did Huttmann recommend? A map to be published after 1844 by the Royal Geographical Society would, according to Huttmann, have to be subjected to modern scientific European standards of mathematical measurement, as they had been transferred by the Jesuit missionaries to the Qing court in the seventeenth century. Although Huttmann mentions Jesuit and Qing geographical works alike, most Chinese cartographic works he mentions are in a way connected to the European cartographic tradition. The only atlas made entirely in China and published before the Kangxi atlas is the *Guangyu tu* 廣輿圖 (Enlarged Terrestrial Atlas) which he attributes wrongly to the Yuan Dynasty geographer Zhu Siben 朱思本 (1273–1333) and his travels in the Yuan empire between 1311 and 1320. The *Guangyu tu* is in fact a Ming-dynasty work, compiled in 1579 by Luo Hongxian 羅洪先 (1504–1564), who, however, based his work on the *Yudi tu* 輿地图 (Terrestrial map) by Zhu Siben.

In Huttmann's report, the Kangxi atlas occupies a very prominent position, much more so than the revised versions created under the Yongzheng and Qianlong emperors. It was commissioned by the Kangxi emperor, and compiled by means of a decade of surveying work in the Qing empire by a group of Jesuit and Qing geographers. The maps resulting from these surveys were the foundation for the maps published in Europe by Jean-Baptiste Bourgignon d'Anville (1697–1782) in 1735 (Cams 2014: 51–69).

The Yongzheng emperor did not send out new survey expeditions, but used the already compiled survey maps of the missionaries as foundation for a revision. In 1725, Fr. Régis (1663–1738) and Fridelli (1673–1743) drew maps for this revision extending into Central Asia with information obtained from local Qing officials. The ambition to feature the most scientific (i.e. mathematically correct) maps is demonstrated by the depiction of Russia, which, it has been thought, may have been taken from a German atlas that in 1727 was given to the Yongzheng emperor by the Serbian envoy in the service of Peter the Great (1672–1725, r. 1721–1725), Sava Vladislavich (1669–1738) (Mosca 2013: 106).

The second half of the eighteenth century witnessed costly wars carried out by the Qianlong emperor, the largest and last expansion of the Qing empire and the incorporation of Xinjiang. In 1746, commissioned by Qianlong, the last compilation of imperial geography was compiled (without Jesuit involvement), the *Da Qing yitong zhi* 大清一統志 (Comprehensive Gazetteer of the Great Qing Realm). The Kangxi and Yongzheng missionary survey maps, too, were revised and published anew in 1761, now including India, Afghanistan, Persia and Arabia. This map again came to the attention of foreign traders, and apparently deemed to be highly useful: a copy of it is mentioned by Huttmann as having been presented in 1825 to the East India Company by John Reeves (1774–1856).[7]

Returning to the Huttmann text: he omitted the Yongzheng maps and describes only fleetingly the survey expeditions between 1756 and 1759. As a result of the victories over the Junghars and the Khojas, Qianlong dispatched new survey expeditions consisting of the Portuguese Jesuits Felix da Rocha (1713–1781) and Joao d'Espinha (1722–1788) as well as the Qing officials He Guozong 何國宗 (d.1767), Minghatu 明安圖 (1692–1763) and Fude 富德 (d.1776).[8]

Huttmann mentions only the two Jesuits, while the Qing participants, cartographers and geographers, have been identified and uncovered during the last 15 years. Their findings were compiled with the information given by locals, appearing in a new survey in 1761, the *Xiyu tuzhi* 西域圖志 (Illustrated gazetteer of the Western Regions). Hallerstein, Anton Gogeisl, da Rocha and d'Espinha served as consultants and co-authors in this project. Michel Benoist completed the copperplate printing of the 1761 edition, most likely between 1769 and 1771; in 1773, the Jesuit order in China was disbanded, but some missionaries stayed on and participated in 1774 in the creation of survey maps during the Second Jinchuan War (1771–1776). In 1776, the Qianlong emperor gave his last mapping task to the Jesuits and ordered the area around Mukden to be charted (Mosca 2013: 111).

Huttmann mentions the surveys done between 1768 and 1773 by Jesuit missionaries Hallerstein, d'Espinha and da Rocha, whose work informed the second updated edition of the *Xiyu tuzhi* from 1782 (the last one on which the Jesuits consulted).[9] Huttmann esteems these maps important in so far as they had been made at the orders of general Agui, whom he believes to have been competent. The maps also included the Miao areas, newly conquered in 1775 [for a biography on Agui refer to Hummel (1943: 6–8)].

Large cartographic projects, sponsored and supervised by the Chinese emperor and carried out cooperatively by European Jesuits and Qing cartographers, came to an end in around 1776 and with it the 'consultancy', involvement and co-authorship

[7]Huttmann (1844: 120). For an exact account of the Jesuit involvement of the creation of maps please refer to Mosca (2013: 110 ff).

[8]Mosca (2013: 107). The Khojas were a group of religious leaders ruling the Oases of Southern Turkestan, and before 1755 under the rule of the Junghars. Perdue (2005: 289 ff), I would like to thank Matthew Mosca for his insight in this topic.

[9]Huttmann (1844: 121). Huttmann believed them to be the foundation for the maps that Klaproth published in his translations of Timkovski.

of the Jesuit missionaries. Rather than being responsible for the whole process of map making, it is more reasonable to assume that the Jesuits were in charge of the proper mathematical calculation during the production of the maps, but had no say in the final drafts, which remained in the hands of the Qing officials and court map makers [this argument had been made by Mosca (2013: 114)].

The services of Jesuit mathematicians, it seems, were no longer required during the late reign of Qianlong. Between 1784 and the 1840s, only a handful of European Catholic and Russian missionaries lived in Beijing, the capital of the Qing empire. They had by and large lost their influence on the Qing emperors and their presence in the city was tolerated rather than embraced. Whereas the Qianlong emperor still was very interested in the further development of other parts of his scientific projects, no new missionary surveys were carried out. Meanwhile, most of the Kangxi-era Jesuit mathematicians as well as their disciples had died. By 1790, none of these scholars was still alive: Benoist and Hallerstein died in 1774, da Rocha in 1781 and d'Espinha in 1783, by which time their expertise was no longer required (Mosca 2013: 113).

3 Cartographic Depictions of China After 1800

Rather than withdrawing inwards and excluding themselves from the world, as has been suggested, the Qing officials, and particularly the emperors, stayed open, interested and curious to all forms of Western technology, though they denied this publicly for reasons of domestic policy (Waley-Cohen 1993: 1544).

Yet, when the Qianlong emperor famously refused to establish trade relations with Great Britain and feigned disinterest in the proffered Western technological objects, this was interpreted as xenophobia, resistance to progress and close-mindedness, an attitude Europe considered intolerable, given the political, philosophical and technological developments of the eighteenth century. Additionally, Europe had developed a desire of supremacy in its interpretation of other cultures: thus, the closed Canton system was seen as a contradiction to the free world markets promoted by Adam Smith. Through European eyes, the relatively traditional societies compared unfavorably to changes of their own post-revolutionary and industrializing societies (Waley-Cohen 1993: 1543). China, on the other hand, was not wholly hostile to certain technologies. Chinese mapmakers continued to use the Jesuit technologies of mapmaking in their own cartographic updates, which confirms that Qing geographers, rather than imitating European cartographic traditions, integrated such practices creatively into their own cartography (Cams 2017: 188).

In 1844 Huttmann specifically recommends that two Chinese atlases be taken into account. The first of these is the update of the missionary surveys published in 1832 by Li Yanghu, of which, however, no copy was obtainable in England at the time, as Huttmann wrote.[10]

Secondly, he recommended the use of a Chinese atlas published by Li Mingche 李明徹 (1751–1832) in 1825 under the title of *Da Qing wannian yitong dili quantu* 大清萬年一統地理全圖 (Complete Geographical Map of the Everlasting Unified Qing Empire). Li Mingche had been acquainted with European principles of geography, writes Huttmann, and his work included one general map of the Qing empire, as well as forty special maps of the provinces which contain the latest information on the cities and place names (Huttmann 1844: 125).

After this assessment, Huttmann concludes with the recommendation that all the information obtained from these several maps should be used for the creation of a new map. As the scientific foundation for the new map, he recommends the Kangxi map, despite the more recently printed version of the Qianlong map. The Kangxi map, in his estimation, was mathematically much more reliable, as had been verified by the travels of Sir Francis Davis (1795–1890) in 1816 and by Igor Timkovski (1790–1875), whose maps had been published by Julius Klaproth (1783–1835).[11] The Li Mingche map, on the other hand, he deems relatively reliable and up-to-date with respect to the administrative system and the names of major and minor cities and villages; its use is recommended for these purposes.

In both assessments, he basically reflects the opinion of some of the elite Chinese scholars working in the field of cartography and geography at the turn of the nineteenth century, who had become skeptical and more critical towards Jesuit techniques and scientific methods. Generally, scholars of the *kaozheng* 考證 or evidential scholarship movement at the end of the Qianlong era considered Jesuit writings and methods important, but not entirely reliable. Li Mingche's work for example was commissioned as the part of a Qing local gazetteer by Ruan Yuan 阮元 (1764–1849).[12] Li Mingche, a daoist monk from Guangzhou, was an exceptional figure in so far as he had no connections to the Confucian elite usually tasked with mapmaking. At the end of the nineteenth century, the Jesuit survey maps came to his attention and he studied their calculation techniques. Ruan Yuan by coincidence met him through one of his aides, was impressed by Li's mathematical skills adapted indirectly from the Jesuits, and asked him to do the cartographic mathematical calculations for his gazetteer, thus turning this gazetteer into one of the most exact ones available at the end of the nineteenth century (Mosca 2013: 211).

[10]This map is mentioned in the Chinese repository, Vol. IX, p. 64. Huttmann assumes it to be in the Royal library in Paris as mentioned in a "Journal asiatique" in 1843. I have not been able to identify Li Yanghu.

[11]Sir John Francis Davis, later governor of Hong Kong, published his work in 1836, Timkovski's travels 1820–1821 were translated into French and published by Julius Klaproth in 1827, together with an atlas.

[12]On Ruan Yuan see Wei (2006).

Huttmann concludes his presentation to the Royal Geographical Society with the statement that, if information from these sources is combined, it would become possible to create a map that is actually more precise than any other map on any other Asian country, India included. However, concerning the financing of a map like the one he proposes, he is not optimistic:

> The statements in this paper show the imperfection of even the newest and best maps of the Chinese empire published in European languages, and that abundance of excellent materials for the construction of a new and comparatively perfect map of the Chinese dominions exist either in England or in China, whence they could easily be obtained. The only point that remains unsettled is who should defray the expense of compiling and engraving such a map or atlas. Had the connection of the East India Company with China continued, there is scarcely any doubt that, with their accustomed liberality, they would have defrayed the expense; and even now, although that connection has been dissolved, it is not at all improbable that they would afford pecuniary assistance in the execution of such a work, especially as their territories approximate to the Chinese empire both on the north and east. Although her Majesty's Government does not usually aid such undertakings, yet the great political and mercantile interest this nation has in China may perhaps induce the ministry to afford assistance in the publication of so useful an auxiliary to our commerce as a good map of China. Many individuals also, who are desirous of promoting geographical knowledge, would be likely to contribute funds towards the publicatlon of such a work if it should be undertaken by your Society. Neither should this fact be overlooked, that it is almost certain that the proceeds of the sale in Europe, America, and China; would ultimately repay a considerable proportion if not even the whole, of the outlays (Huttmann 1844: 127).

Huttmann was writing at a time when no more than a few travelers had been to China. Of the Europeans, he mentions solely Timkovski, his translator Klaproth, and Davis (Davis 1836; Timkovski 1827). He omits the travel reports from the Macartney mission of 1793 as well as the report by Henry Ellis (1777–1855), who published on Lord Amherst's 1816 embassy.[13] Robert Fortune (1812–1880) as well as Evariste Huc (1813–1860) would publish their very influential observations and travel accounts only later.[14] He does briefly mention Karl Gützlaff (1803–1851), who did pioneering work during his three travels in the 1830s, but not Joseph de Guignes (1721–1800), who travelled at the beginning of the nineteenth century between Beijing and Manila (De Guignes 1805).

Neither does he include other scientific maps on China, particularly survey maps which had been created in Germany, among them the maps and works by Adolf Stieler (1775–1836), Carl Ferdinand Weiland (1782–1847), as well as Hermann Berghaus (1828–1890) and Friedrich von Stülpnagel (1786–1865), who also worked in Weimar. Though none of these men had been to China or Central Asia (they compiled the information for their maps from other maps, already published in Europe), their vision of the world would influence the geographically interested citizen until far into the twentieth century.

This seems to reflect the general situation of cartography in Europe between 1800 and 1860. On the one hand, the large and rich East India Company, who

[13]Ellis (1817).

[14]Fortune (1847, 1853, 1857), Huc (1855–58), Gützlaff (1834).

certainly would have paid for such an important undertaking, had been disbanded. On the other hand, new geographic interest was revived. Huttmann mentions St Petersburg and Paris as centers of cartography concerning China, but elsewhere, too, geographic interest had started to flourish. In place of the prosperous East India Company, many new privately initiated societies were founded. The Royal Geographical Society in London, to whom Huttmann reported, is one example. But also in Germany there was an upsurge in interest in geographic information from everywhere around the globe, and thus Carl Ritter (1779–1859), with the participation of Alexander von Humboldt, had founded in 1828 *Die Gesellschaft for Erdkunde* in response to the rapid expansion of a literate middle class hungry for exotic and travel narratives, especially geographical and ethnographic accounts. Among these were also *Petermann's Geographische Mittheilungen*, published by Justus Perthes (1749–1816) in Gotha, developing during the latter half of the nineteenth century into one of the most respected geographic journals of Europe, due to their high-quality and up-to-date cartographic products. The city of Gotha had during the eighteenth century already been a place of creative production and collection of knowledge. When Perthes founded his publishing house in 1785, he was initially known for the publication of the famous Court Calendar of Nobility, but established himself during the early nineteenth century as an expert of cartography. In 1854, August Petermann (1822–1878) arrived, a highly skilled cartographer with an excellent academic network and financial acumen, who founded the geographical journal the following year. During the next decades, Petermann provided the newest geographic reports, accompanied by first-rate maps, turning into one of the most important mediators of newly constructed world knowledge. After 1860, Petermann maintained his high standards by sending his own exploratory missions, mainly to Africa, but later also to China and Tibet, with correspondents such as Ferdinand von Richthofen (1833–1905) and later Sven Hedin (1865–1952). Their geographical and cartographical surveys were among the first to arrive in Europe after the missionary surveys conducted during the Qianlong era.

In China, the end of Jesuit missionary involvement does not seem to have made much of a difference in cartography. The survey maps created with the consultancy of the Jesuits were updated during the early nineteenth century, and coexisted with what Huttmann called native cartography. Qing cartography itself also progressed greatly during the 1840s and 1850s. Huttmann wrote his report in 1844, which was too early to include Chinese works such as the *Yinghuan zhilue* 瀛環志略 (Short account of the maritime circuit), a world geography by Xu Jiyu 徐繼畬 (1795–1873) and the compilation of world knowledge by Wei Yuan 魏源 (1794–1856) (Yee 1994: 108). In China as well, the transformation of the world, by which is largely meant the modernization of the West and a global shift of political and economical power, was being noticed, and at the beginning of the nineteenth century, Chinese intellectuals started to collect information on Europe and the United States, a tendency which became more pronounced after the end of the Opium War in 1842. European scientific standards would replace Chinese cartographic traditions only at the end of the nineteenth century.

4 Conclusion

The opening of five Chinese port cities to international trade stipulated in the Treaty of Nanjing in 1842 renewed the European, but mainly the British, interest in exact cartographic information on all parts of China. The Royal Geographical Society, founded in 1830 in London thus commissioned an investigation into existing maps and asked geographer and missionary William Huttmann to provide a sketch of the history of cartography on China as well as a suggestion for the best materials from which to compile a new map that could be used for dealing with the newly opened empire. William Huttmann was deemed an appropriate choice because he had lived for some time in China, and was expected to know the languages and be familiar with the literature on China, especially regarding cartography.

An analysis of his statement, published in 1844, at a time of cartographic and geographic transformation in Europe and in China, gives a fleeting glance at the state of international geography before the stage of fully fledged colonial cartography was reached at the end of the nineteenth century. Huttmann himself set great store by scientific measurements, introduced into China by Jesuit missionaries during the era of Kangxi, but highly esteemed what he called ‘native’ Chinese geographical skills as well. He briefly elucidates the most important cartographical works by Chinese geographers, but proceeds quickly to the survey commissioned by the Kangxi emperor and created in cooperation between Jesuit mathematicians, Qing scholars, and Manchus in the late seventeenth and early eighteenth century. This work was later known as the Kangxi atlas.

Kangxi’s attraction to the mathematical precision of Jesuit computations and their application to Qing cartography becomes immediately evident when his interest in imperial expansion is taken into account. Traditional Chinese imperial geographies and maps served hitherto only to illustrate the calculations of distances. These were given in written form and accompanied the map rather than being present on the map. The Kangxi emperor recognized the usefulness of the exact measurements on the actual maps, rather than in written form, as it communicated the extension of his empire not only to the King of France, but also to the local dignitaries of Central Asia. Jesuit missionaries, with an expertise in the field of calculation, thus were sent along on several field surveys. Their calculations were unrivalled by Manchu officials or other imperial subjects and were used for new maps of the Qing empire. Jesuit missionaries were also involved in the updates of the Kangxi atlas, in the form of the Yongzheng and the Qianlong atlases. Although they never had full authority over the process of mapmaking (this authority resided with Qing scholars) and were only consulted, their mathematical skills were deemed to be the most exact, an opinion which was held by both the Qianlong emperor and Huttmann. After 1782, all maps based on the missionary survey were edited and compiled without Jesuit support: although some Jesuits remained at the court of Beijing, the Chinese emperor was no longer interested in this particular aspect of cartography, and the last disciples of the Jesuit cartographers of the Kangxi era had passed away.

In the end, Huttmann recommended to the Royal Geographical Society to take the Kangxi atlas as the basis for a new China map, while integrating new calculations done by Russian geographers, and additional information form a Chinese atlas published by Li Mingche in 1825 under the title of *Da Qing wannian*, part of a gazetteer published by Ruan Yuan.

What can Huttmann's text tell us about the general state of geography and cartography in Europe and China at that time? In short, he provides a survey about the richly developed geographic field in China and leaves us to ponder about the field of cartography in Europe.

First, Huttmann esteems and recommends Chinese geographical works and the Chinese survey maps created with Jesuit involvement alike for the 'new map' he envisions, but is always critical about the quality of the calculations done by the Jesuits, recommending the Kangxi-era atlas rather than its Qianlong-era version. From the existing European travel literature he only selects very few works from authors based in Paris and St. Petersburg, leaving out others, as knowledge of the area and the language seem to have been important criteria for him in determining whether a book or work was useful or not.

He shows no interest at all in the emerging scientific cartography in Europe and the maps already existing in Europe, done by resident, non-travelling cartographers. Excellent maps had been made from the compilation of the maps of d'Anville by German mapmakers Stieler and Berghaus. But their maps were only technically improved and did not use first-hand surveys; additionally, they were written in a German transcription of the Chinese language, thus omitting the subtleties of the maps of the High Qing and the Kangxi era, during which a map communicated the extension of the realms in several different languages. The history of German cartography in the nineteenth century reveals only the development of new details of representation: the coloring of mountains, borders, etc. rather than the inclusion of new, first-hand information. Huttmann seemingly prefers imperial cartography with ample funds: Huttmann particularly laments the fact that between 1800 and 1844, large institutions with an interest in good maps like the East India Company were in decline in Europe. Indeed, during the 1850s, national geographic societies came into existence, each collecting a multitude of new materials and observations of travelers worldwide for later publication.

Cartography in Europe as well as in Asia up to the end of the eighteenth century has been the subject of thorough analysis in terms of cultural representation and symbols of imperial power. Huttmann's observations in 1844 show respect for Chinese cartography, in which he discovers only a change insofar as the Jesuits are no longer involved. Other than that, Chinese cartography continues to develop. European cartography on the other hand was in transformation: no longer able to use the funds of the rich East India Company, and not yet able to secure funding from private sources, imperial cartography seems suspended and fractured within the emerging nations, with cartographic centers remaining in St. Petersburg and Paris. After 1860, cartographic principles developed in Europe seem to have taken over in almost all parts of the world. As the principal and most skilled mapmakers, German and French cartographers emerged and cartography and geographical knowledge became open to everyone, with interests shifting toward 'colonial maps'.

In China, the various mapping cultures were replaced by a monoculture only at the end of the nineteenth century. This was not due to the fact that Western mapping techniques were superior, but rather due the experience of a global homogenization of mapping techniques that arrived with modernity. It is not known whether the Royal Geographical Society acted on Huttmann's recommendations.

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From 'All Under Heaven' to 'China in the World': Chinese Visual Imaginations from the Nineteenth and Early Twentieth Centuries

Laura Pflug

Abstract The second half of the nineteenth and the first decades of the twentieth century saw the encroachment of foreign powers on China combined with internal political and socio-economic crises, revolts and power struggles. The subsequent reshuffle of territorial control against the backdrop of the so-called global condition challenged Chinese intellectuals to confront a new worldview as well as geographical ideas and techniques from other countries. They had to reassess and enhance their geographic and cartographic knowledge, include new geographies, and question China's position in the world. This process was accompanied by travel, study abroad, the translation of maps from other countries as well as the founding of Chinese geographical societies and the production of new Chinese maps. Based on Chinese cartographic images and atlases, this paper will examine visualizations of China in its place 'under heaven', as depicted on nineteenth-century maps of the *tianxia* 天下 variety, and cartographic representations of China and the world from the late Qing and Republican times, when China was in the process of reinventing and thus remapping itself. In addition, it will introduce some of the creators of these maps, whose biographies mirror intellectual and cartographic currents of their time.

1 Introduction[1]

Looking at Chinese maps from the nineteenth and early twentieth centuries, one comes across a variety of visual representations of China and the world. They include images—or rather imaginations—of 'all under heaven' (*tianxia* 天下), as

[1]This paper presents a case study from the project "Maps of Globalization: The Production and the Visualization of Spatial Knowledge" at the Leibniz Institute for Regional Geography. The project is part of the Collaborative Research Centre (SFB) 1199: "Processes of Spatialization under the Global Condition", which is funded by the German Research Foundation (DFG).

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well as geographical maps from school atlases, and even cartoon maps. These representations depict various conceptions of a hierarchic order on a spatial level and convey shifts in the focal points of world imageries like a picture book unfolding against the backdrop of Chinese history. Through these pictures, we notice the active approach adopted by some Chinese mapmakers in shaping these images and placing China on the map of the world. Therefore, the aim of this paper is twofold. On the one hand, it will examine spatial transformations and hierarchies as well as the interplay between the Chinese realm and the outside world as represented on the maps, and on the other hand, it will highlight the role of cartographers in creating visual images of national and global imaginaries.

2 Another Perspective on Chinese Maps

The mid-nineteenth century saw the emergence of a ‘global condition’ and the end of “that world of autonomous regions and arms’-length appropriations of distant goods and knowledge that had enabled disparate power centers and cultures to draw from exchange with each other the means necessary to carry on their own, distinct ways” (Bright and Geyer 2015: 290). It brought a heightened and accelerated level of global interactions, accessibility and interdependence, and it affected the construction of spatial formats, such as territories, places, scales, and networks, as well as their reciprocal relationships and hierarchic order. Processes of spatial reorganization along with interconnections and increased flows of persons, material goods, knowledge and ideas on a global level changed people’s perceptions of the world. As media for the production, reproduction and circulation of these new perceptions, maps can reflect spatial aspects of the global condition.

Recent American and European studies of Chinese maps from late imperial times have focused on topics like the Sino-European cartographic collaboration in mapping the realm of Qing China (Cams 2017), the use of maps in the building of the Qing empire (Hostetler 2001), distinctive features of Qing dynasty maps (Pegg 2014), cultural aspects and the development of Chinese world maps (Smith 1998), and the impact of foreign knowledge on Chinese cartography (Amelung 2007), as well as its limits (Yee 1994). For the mainland’s Republican era as well as the PRC, maps of ‘national humiliation’ were a significant and insightful topic of study (Callahan 2009). Chinese maps have also been discussed as part of the broader theme of early twentieth century textbooks (Zarrow 2015). Being positioned closest to the perspective of this paper are recent works by Matten (2016) and Zhang (2017), which have both not focused on, but also included Chinese maps. Matten analyzed and compared concepts of world order in twentieth century China and Japan, looking at the way territorial and spatial perceptions affected China’s political thinking. Zhang examined the role of Chinese revolutions for the spatial reorganization processes in case studies from the third, the end of the nineteenth, and from the twentieth century, drawing on material like primary literature, maps, political treatises, historiography, plays, films and art.

This paper aims to fill a research gap by looking at cartographic representations of China and the world through the lens of the global condition and varying degrees of global consciousness. It will do so by examining the way conceptions of China and the world were produced, reproduced and transported through Chinese maps, particularly through cartographic material used for education, thus bearing the potential of affecting an entire generation's knowledge and image of the world. I show that under this novel condition Chinese maps from the late nineteenth century to the first decades of the twentieth century, which depicted global imaginaries, clearly shifted in form and focus displaying a new global consciousness. However, while the creators of these maps were influenced by their experiences drawn from travelling abroad and collecting and translating cartographic materials from other countries, their maps still exhibit distinctive cartographic elements and narratives derived from earlier maps produced in imperial China. I further argue that these visual changes were not merely a reaction to global political pressure, but also display a certain amount of agency and demonstrate the active and creative ways some Chinese intellectuals used these influences for their cartographic work. To contrast the changes of global imaginaries in these cartographic images, I will first turn to a specific genre of world maps from imperial China.

3 Cartographic Representations of *Tianxia*

The Chinese concept of *tianxia* is an old and multi-layered one, which "first referred to the realm of the moral and civilized world" (Wang 2013: 133). Still, the term is a persistent one and by no means outdated, as in twenty-first century China a hotly debated revival of 'all under heaven' surfaced as an ideal world order and a means to tackle today's global issues (Zhao 2005). What, then, do images associated with *tianxia* look like? Without delving deeper into the contemporary use of 'all under heaven' and its complexities,[2] this question provides a good starting point for examining the representations of China and the world in Chinese maps from the last stages of the imperial era and the mainland's Republican period.

A nineteenth century example of an image implying 'all under heaven' is the map *Da Qing yitong tianxia quantu* 大清一統天下全圖, the Complete Map of the Unified 'All under Heaven' under the Great Qing (Fig. 1). According to the American Geographical Society Library Digital Map Collection, it is a hand-colored wood block print (107 × 62 cm) which was published in Beijing and created by a certain Zhu Xiling 朱錫齡. Zhu, about whom little is known, was a native of the Chinese province of Zhejiang. He was probably an official with cartographic skills and is mentioned by the Bibliothèque nationale de France as the author of the text on another map of the genre, the *Da Qing wannian yitong dili quantu* 大清萬年一統地理全圖 (Complete Geographical Map of the Everlasting

[2]For a critical discussion see Callahan (2011: 91–111).

Fig. 1 Complete map of the unified 'All under Heaven' under the Great Qing, *Da Qing yitong tianxia quantu* 大清一統天下全圖, 1818 (from the American Geographical Society Library, University of Wisconsin-Milwaukee Libraries)

Unity under the Great Qing). His Complete Map of the Unified 'All under Heaven' under the Great Qing shows the realm of Qing China in the center of the map, taking up the main part of the picture, while the space at the margins displays Qing China's neighbors as well as distant countries like the Netherlands (*Helan guo* 荷蘭國) and the 'border of England' (*Yingjili guo jie* 英吉黎國界). The empire is divided into its provinces, which are depicted in different colors and clearly distinguished from each other by demarcating lines. The graphic structure of Qing China displays a spatial hierarchy, as the provinces are accentuated colorfully, while the rest of the empire is not. The map also includes various further administrative units like the provincial capitals, the districts, and so on, as well as physical features such as mountains, rivers, and the Great Wall.

Like many Chinese maps from imperial times, it bears several explanatory textual elements placed all over the image as well as on its margins, thus creating a non-topographical structural pattern. A text column on the upper side provides information about the provinces and their respective distance from the capital, their geographic position, their dimensions and their administrative units. A text at the bottom right is signed by Zhu Xiling and bears the date "twenty-third year of the Jiaqing reign period" (1818), but contains textual information from a preceding Qing dynasty map of the genre titled *Jingban tianwen quantu* 京板天文全圖, the Capital Edition of an Astronomy [based] Complete Map, which was made by Ma Junliang 馬俊良. Ma's cartographic image was produced during the 1780s or early 1790s (Smith 1998: 77). The texts on both maps refer to an even older map from the time of the Kangxi emperor (r. 1661–1722) as well as later changes of spatial administrative units creating the need for further mapping. They also include a legend of the map signs.

A conspicuous desert strip divides Qing China from Russia on Zhu Xiling's map, but, in contrast to the clearly distinguished demarcations of the provinces, other borders are far from clearly indicated. It is not indicated where, for example, the Qing realm ends and Korea starts. The geographical dimensions lack accuracy, and the shapes of the provinces as well as the lands around it are distorted. The further away the countries are from Qing China, the smaller they are depicted, as if looked at from afar. The Netherlands, for example, are pictured as being smaller than Taiwan and having about the same size as the Ryūkyū archipelago, here being represented only by a single island. Unlike the Qing provinces, the surrounding countries are not displayed in color. They show rather few, if any, topographical features, but are filled with textual information. Texts about countries like Korea, Vietnam and the Ryūkyū islands describe their historical relationships with China, mainly as tributary states. Despite previous Sino-European cartographic contacts between Jesuit missionaries and members of the elites in Ming (1368–1644) and Qing (1644–1911) China, the locations of and textual information about faraway countries are imprecise or inaccurate. The Netherlands, for example, are shown as an island located next to Russia, and the text states that the languages of the two countries are interlinked. This inaccuracy indicates the low interest in and low importance of proper information about distant lands for this particular kind of map. This neglect contrasts with the detailed depictions of administrative units in the Chinese provinces as well as their explanatory information.

Maps of this genre seem to have been the predominant type of cartographic images of the world in Qing China between the late seventeenth and the mid-nineteenth century or even longer (Smith 1998: 77), and they continued to be published throughout the whole century. The latest edition of a *tianxia* map that I came across is part of a Chinese atlas. According to the Library of Congress, it has probably been published as late as 1890 and shows the administrative system of the Jiaqing reign period (1801–1820). The map is titled *Tianxia zongyu tu* 天下總輿圖, the Map of the Comprehensive Area of All under Heaven, and shares several features of the aforementioned representation. Despite many similarities, however, this image lacks the geographical and historical information provided by the texts on the first map, and it also lacks its color and visual splendor. It is reasonable to suspect that, while the more opulent *Da Qing yitong tianxia quantu* has been produced for the imperial court, the *Tianxia zongyu tu* was published for commercial purposes. This, in turn, indicates that by the start of the 1890s there still seems to have existed a broader audience for this kind of cartographic publication.

Nineteenth-century maps associated with *tianxia* represent images, which are hierarchically structured and focus on the Qing realm, while marginalizing the world surrounding it. The Complete Map of the Unified 'All under Heaven' under the Great Qing further displays a hierarchic structure inside the empire itself, using colors to visually emphasize the provinces. Cartographic images of the *tianxia* variety graphically stress the notion of center and periphery, while borders, which differentiate between China and other countries, and thus graphically distinguish between 'us' and 'them', are not given high priority. This being so, these maps do not depict Qing China as a clearly bounded territory. The representations of *tianxia* rather stress the dimension of scale, being hierarchically structured and differentiating between the dominant and the marginal. The conception of the world emerging from these maps displays a hierarchic relationship between Qing China as the 'central land' (*Zhongguo* 中國), which is graphically emphasized by size and color, and other countries. The text signed by Zhu Xiling in the *Da Qing yitong tianxia quantu* also indicates several layers of time integrated in the map. Like Russian dolls, this text cites the text of a preceding map, which in turn refers to an even earlier map, thus pointing to a line of cartographic tradition.

By the mid-nineteenth century, with political alarm bells set off by China's defeat in the Opium War (1839–1842) and against the backdrop of the emerging global condition, individual intellectuals in Qing China recognized the need for the creation of more accurate images of the world and distant countries as well as a heightened global awareness, and by the end of the nineteenth and the beginning of the twentieth century, in the course of successive losses of territorial control, a strong interest in world geography that encompassed wider circles of Qing-era intellectuals can be observed.

4 An Image of Political Alarm

The last years of the nineteenth-century brought a shocking defeat by Qing China's eastern neighbor Japan, inferior in size but by then superior in technology and education. The Sino-Japanese war of 1894–1895 caused a crack in China's self-awareness. After this war, as Luo put it, "Chinese scholars not only accepted the existence of the external world, but also increasingly keenly felt, that it was impossible for China to remain outside this world, whether it wished it or not" (Luo 2008: 97). The Sino-Japanese war was followed by Russia further focusing its foreign policy on the Far East while constructing a railway line through Manchuria, as well as Great Britain, France and Germany gaining spheres of influence in Qing China's realm. A cartoon map, which seems to have been published circa 1899 in Japan by a Chinese anti-Manchu revolutionary (Wagner 2011: 18), addressed the developments of that time. This image was not only used to heighten the political awareness of late nineteenth century Chinese, but has later also been included into numerous schoolbooks of the PRC, thus serving as a warning example of "the evil plans of the imperialists" (Wagner 2011: 18) for Chinese youth.

The Illustration of the Present Situation, *Shiju tu* 時局圖 (Fig. 2), conveys a cautionary world view of political alarm, which stands in contrast with the conception of 'all under heaven'. The cartoon map does not show Qing China as a strong center surrounded by a marginalized outside world. It pictures the outside world, represented by personalized symbols of mostly faraway territories, spreading its influence over the empire, while the Qing officials are putting up no efforts for defense and reform, but are merely sleeping, dining and hopelessly lost in their old ways. The majority of the foreign countries threatening China are represented by animals, such as the huge Russian bear, the French frog and Britain as a tiger with Germany as its tail (looking like a sausage), while the non-personalized Qing realm is about to fall prey to the encircling beasts. Interestingly, France is not symbolized by its national emblem, the Gallic Rooster, but by an amphibian with more comic potential. The animals in the cartoon are pictured as menacing, but at the same time appear ridiculous in their self-righteous posture. Japan is depicted by its national symbol, the sun, which has already colonized Taiwan and is now greedily gazing at the Chinese mainland. At the bottom of the image, other countries' signature animals are already standing in line and waving for attention. Here, what was once at the margins of the *tianxia* world image, is now invading the center.

Qing China is pictured in one color only, as are the other countries on this map. The imperial realm is neither depicted in yellow, the emperor's color and the color of the soil, nor in red, the traditional color of luck, which were both later mainly used for the cartographic coloring of China, but in green. Borders are clearly drawn around each country's territory, which indicates that by then, the differentiation between 'us' and 'them' had gained acute significance. The 'central state' (*Zhongguo*) is still the focus of the image, but compared to the *tianxia* maps, its proportion has shrunken, while the surrounding areas, especially the lands under Russian rule, but also those under Japanese control, have graphically expanded.

Fig. 2 Illustration of the present situation, *Shiju tu* 時局圖, ca. 1899 (National Archives and Records Administration, National Archives Catalog ID: 5634178)

The Chinese text on the right side of the map says ‘self-evident’, and the one on the left says ‘clear at one glance’. The names of the countries and the Qing provinces, however, are written in Chinese as well as in English, and for some countries, brief mottos are given in English, adding a cosmopolitan flair to the image. The English text besides the Japanese sun, for example, says “The rising sun (John Bull & I will watch the bear)”. The cartoon was drawing on a slightly earlier, non-colored and simpler original version of the picture, which had been produced in Hong Kong by a certain Xie Zuantai 謝纘泰 (Wagner 2011: 15). Xie (1872–1937) was himself part of the ‘human flow’ under the global condition. He was of Chinese descent and first grew up in Australia, so he was fluent in English, before migrating to Hong Kong with his family in 1887 as a teenager. Yang Quyun 楊衢雲 (1861–1901), who has very likely published the modified cartoon map in Japan, was also a fluent speaker of English, as he had been educated by missionaries (Wagner 2011: 15, 18, 91). While promoting the revolutionary cause he travelled to Johannesburg, Durban, Rangoon, Colombo and Yokohama in the late 1890s (Faure 1997: 94, 95). Xie and Yang were moving in international circles and on the maps they addressed their audience in both languages. Xie’s cartoon map was published in different versions, for example as a postcard (Wagner 2011: 23–24), conveying the revolutionaries’ call for change. In the phase of political turmoil and transition during the last years of the imperial era, the developments also stimulated lively intellectual activity that was accompanied by travel and translations, heightened contacts with other countries and their ideas and technical innovations. This activity and change of perspective is mirrored in maps and atlases produced by Chinese cartographers during this time.

5 Mapping the World: China’s First School Atlas

By the beginning of the twentieth century the first school atlas was published in China. The cartographer behind this atlas was called Zou Daijun 鄒代鈞 (1854–1908). Zou came from a family of mapmakers. His grandfather Zou Hanxun 鄒漢勛 (1805–1853) was a skilled cartographer and had cooperated with the scholar and official Wei Yuan 魏源 (Dai 2009: 102). Wei (1794–1856) was among the few who had noticed the need for new cartographic images depicting the world outside of Qing China in the 1840s, which led to the production of his famous *Haiguo tuzhi* 海國圖志, the Illustrated Gazetteer of the Maritime Countries. Zou Hanxun contributed maps for a later edition of this treatise when it was enlarged in the year 1852 (Dai 2009: 102).

Zou Hanxun’s oldest grandson, Zou Daijun, was a reform-minded geographer and cartographer (Norvenius 2012: 27). Between 1885 and 1889 he travelled to England and Russia as staff of a Chinese envoy (Jiang 2008: 93). During his travels Zou Daijun acquired several maps from other countries, among them a world map created by a German cartographer (Lu 2008: 58) as well as European and American atlases and cartographic instruments, and he brought this all back to China (Jiang 2008: 93). After his return from England and Russia, Zou Daijun taught at the Imperial University in Beijing, which was established in the year 1898 (Norvenius 2012: 27). Already in the year 1896 Zou Daijun founded China's first geographical society, which was initially located in Shanghai under the name *Zhongguo yitu gonghui* 中國譯圖公會, the Chinese Guild for the Translation of Maps, but during the same year was moved to Wuchang and renamed as *Yudi xuehui* 輿地學會, the Association of Geography. This Association translated foreign maps and published maps and atlases (Jiang 2008: 93). Among them was China's first school atlas titled *Zhongwai yudi quantu* 中外輿地全圖, the Complete Geographical Maps of China and Foreign Countries.

Zou Daijun's *Zhongwai yudi quantu* was first published in 1903 in black and white and then again in 1908 in color (Lu 2008: 58). It included three depictions of the world—a Complete Map of the Square Image of the Earth, a map of the Eastern Hemisphere, and one of the Western Hemisphere—as well as maps of China and its provinces, the continents and foreign countries, and the archipelagos. Overall, the atlas comprised sixty-eight maps (Lu 2008: 58), for which Zou used the Mercator projection (Zhang 2013: 32). Zou Daijun was not the first Chinese cartographer to apply this projection, as it had already been implemented by Wei Yuan in the 1840s for his Illustrated Gazetteer of the Maritime Countries (Zhang 2013: 32), and thus had probably also been utilized by Daijun's grandfather Zou Hanxun. The Square Image of the Earth from Zou Daijun's school atlas displays the continents, each pictured in a different color. The map shows China as an integral part of Asia, which in the colored version is depicted in yellow. As argued by Karl, "Asia emerged in Chinese thought and political practice at the same time as there emerged a global consciousness among Chinese intellectuals that facilitated a globalized sense of China's position in the world" (Karl 1998: 1117). By drawing connecting lines between different places of the earth, representing the distances of shipping routes, the map conveys the notion of global connectedness. These partly curved lines also lend the image a dynamic expression of international travel and commercial activity—the continents of the earth are reachable, and its people and goods stand in connection to each other. China is located in the right half of the picture, and is depicted in the same color as the rest of the continent, thus does not stand out among the other countries that belong to Asia. So, while China dominated the world images in the maps of the *tianxia* genre, and also occupied the greater part of the revolutionaries' cartoon map, the country had now graphically merged into the Asian continent, and its size ratio, compared to the former maps, had shrunken dramatically.

The prime meridian on this map is particularly noteworthy. It is pictured as running through Beijing and designated as *zhong* 中, 'the middle', as in *Zhongguo* 中國, 'the central state'. Still, China is not placed in the middle of the image, where the prime meridian is usually to be found. While the map appears to be 'modern' in its image of the world, the prime meridian points to a tradition of older cartographic works.[3] Beijing as the location of the prime meridian can already be found in the *Huangyu quanlan tu* 皇輿全覽圖 (Map of a Complete View of Imperial Land), an atlas of Qing China drawn up by French Jesuit missionaries in cooperation with Qing officials under the rule of the Kangxi emperor (r. 1661–1722). While Zou Daijun's world map shows China as part of Asia and part of an interconnected world, the prime meridian subtly puts the country in a special position and connects the image with China's cartographic past.

6 Remapping China: Conceptions from Republican Times

Cartographic representations of China and the world from the mainland's Republican period (1912–1949) reflect a further shift in focus. By then, the imperial times had passed and the country had reinvented itself as a Republic, which was struggling with interior and exterior instability. Two typical examples of maps from that era are included in a school atlas from the 1930s. This atlas is called *Zhonghua zuixin xingshi tu* 中華最新形勢圖, the Maps of the Most Recent Situation of China. It was created by a cartographer named Tu Sicong 屠思聰 (1894–1969), who was born into a family of publishers (Zhou 1998: 30). After graduating in Shanghai in the year 1920, he started teaching geography and in his spare time worked on maps, which he regarded as an important means in the spread of knowledge (Yu and Xu 2015: 70–71). In the year 1922 he founded the Study Society of World Geography (*Shijie yudi xueshe* 世界輿地學社) in Shanghai, which produced and published atlases (Zhou 1998: 30) and also published Tu's *Zhonghua zuixin xingshi tu* in 1933. During his career Tu spent some time in Japan, where he collected numerous Japanese, European and American cartographic materials (Zhou 1998: 30).

The first cartographic image in Tu Sicong's school atlas is a world map, which shows China in the left half of the picture, close to its center. The most striking feature of this image is a conspicuous red border drawn around the Republic of China, which inevitably draws the eye to the country. Given its prominent accentuation, this Map of the Various Countries of the World (*Shijie lieguo tu* 世界列國圖) is rather functioning as a map of 'China in the world'. The red borderline marks an explicit differentiation between the territory of the Republic and the rest of the continent. In the first half of the 1930s a civil war was raging on the Chinese Republic's territory. Japan spread its power over Manchuria, and the developments leading to the Second World War were already looming in the background. The clear red line demarking the Republic of China stands in contrast to the turmoil of the political reality of that time and displays the inward-turn of cartographical focus stressing national self-confirmation and national identity. Apart from its main

[3]I would like to thank Dr. Fung Kam-Wing of the University of Hong Kong for pointing this out to me.

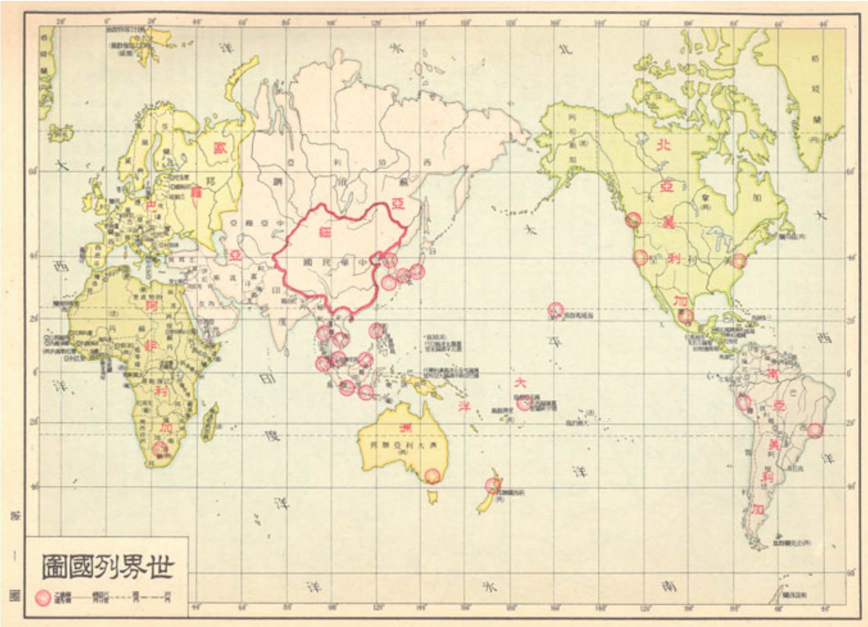

Fig. 3 Map of the various countries of the world, *Shijie lieguo tu* 世界列國圖, 1933 (courtesy of the Leiden University Library)

rivers, the territory displays no topographical features, but is depicted as an almost blank space. Rivers are also the sole topographical features of the other countries, which are separated from each other by thin dashed lines. Australia and New Zealand are left completely blank with no topographical features at all. The continents are each depicted in a different color, with Asia being pictured in a pale, brownish pink. The prominent red borderline is not the only symbol of Chinese identity in the image. Spread over the map are red circles filled with tiny red dots, which represent the places with the largest populations of overseas Chinese, and thus indicate Chinese presence in the world outside of China. They are concentrated in Southeast and East Asia, almost covering these areas entirely, but are also found in South Africa, Australia, New Zealand, North America, South America, as well as on Samoa and Hawaii (Fig. 3).

Another map of this atlas also addresses spaces of Chinese influence. It zooms in on China and displays a frontier of a different kind. The image is designated as the Map of the Changes of the Borders of China (*Zhonghua jiangjie bianqian tu* 中華疆界變遷圖). Apart from its coloring it is largely identical with an earlier cartographic representation from the year 1927 titled *Zhongguo guochi ditu* 中國國恥地圖, the Map of China's National Humiliation, which today can be found in the

Chinese University of Hong Kong Library (Callahan 2009: 155). Given the striking similarities, it can be assumed that Tu Sicong had also created this cartographic image, but, as no author is given for the map in the CUHK Library catalogue, the assumption cannot be verified. On the map from Tu’s school atlas a red line is drawn around what supposedly once belonged to China’s territory. The legend explains the line as the “border of the country in old times”, giving no further specification as to what period exactly it is referring to. The narrative of ‘lost territories’, as displayed in this image, was stressed in Republican-era school education and also taken up in textbooks from that time (Zarrow 2015: 219), passing on the theme of loss and former glory. This narrative influenced the education even decades later, as in the 1990s maps of ‘national humiliation’ gained renewed popularity in history textbooks in the PRC (Callahan 2009: 157). The old ‘border of the country’ on Tu’s map encompasses not only what had once been under the direct influence of the empire, but also former tributary states as well as generous portions of the sea, reaching as far as Borneo, thus expanding the imaginary of the Chinese territory and referencing to its roots as, at least, the dominating power in Asia. The Map of China’s National Humiliation from 1927, which shows the same outline, includes a list that claims the loss of fifteen ‘homeland territories’, fifteen ‘vassals’, four ‘territorial concessions’ as well as no less than fourteen ‘maritime territories’ (Callahan 2009: 155–156). Inside the red borderline on Tu’s map, a partly dotted, thin black line indicates the ‘contemporary border’, which also includes part of the sea, although a significantly smaller one. The coloring is ambiguous, as the Republic of China is depicted in yellow, but so are also territories seized by Japan, such as Taiwan and Korea, making the distinction difficult and visually inflating the impression of territorial extent. Despite the ostensible facts presented on these two maps from Tu Sicong’s atlas, the ambiguities and the different sets of borders reveal the fragility of the national construct and the quest for a stable positioning of China at that time (Fig. 4).

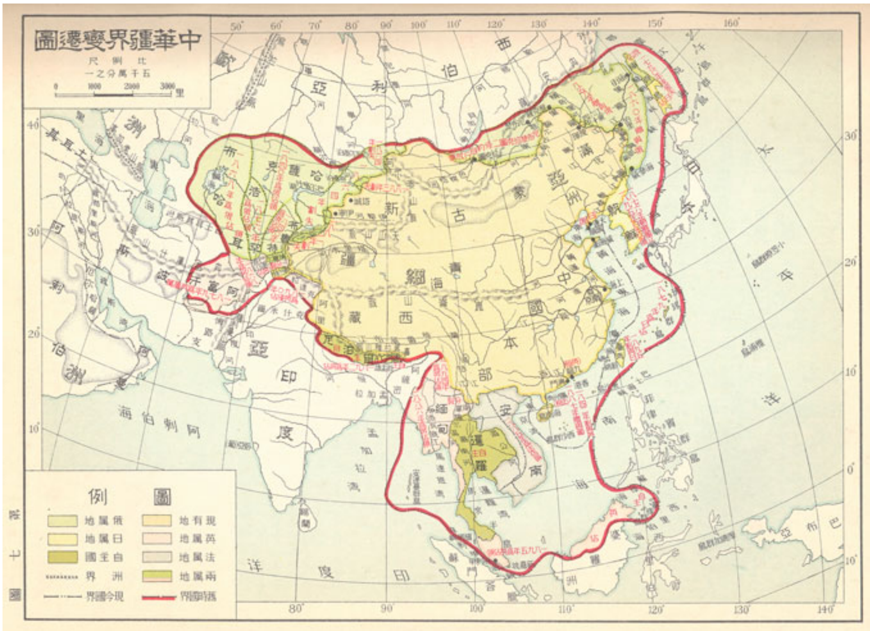

Fig. 4 Map of the changes of the borders of china, *Zhonghua jiangjie bianqian tu* 中華疆界變遷圖, 1933 (courtesy of the Leiden University Library)

7 Conclusion

The cartographic imaginations of China and the world as produced by cartographers from the late Qing and Republican times reflect processes of spatial reorganization and the interplay of a hierarchic order between the 'central state' (*Zhongguo*) and the outside world. Under the global condition and its increased global interactions and interdependencies, these maps evolved from depicting China in an old-established position of strength to being displaced from this spatial certainty and striving for the establishment of a new position. Visualizations as shown on nineteenth-century maps of the *tianxia* genre, which focused on Qing China as the center while shoving the outside world to the periphery, lost their meaning when the rest of the world could no longer be marginalized. Chinese cartographers increasingly turned to and moved in the outside world and produced more 'realistic' world maps. Being produced by cartographers who were themselves part of transnational flows, the maps present an inside view on the impact of the global condition on China. Their biographies reflect a heightened global consciousness and connectivity, which is visible in their cartographic work. Zou Daijun and Tu Sicong travelled to other countries to collect cartographic materials and knowledge, translated cartographic works from foreign languages, and founded geographical associations for the production and distribution of new Chinese maps. Both also passed on their experience and knowledge in world geography to younger generations by teaching. Yang Quyun and Xie Zuantai were multilingual, travelled and moved in international circles, and Xie furthermore had the experience of migrating to China from another continent.

In the transitional process since the end of the nineteenth century, mapping practices also reflected different stages in the quest for the redefinition and repositioning of China in this world. The revolutionaries Xie and Yang aimed to shake up the political consciousness of their fellow countrymen and point out the necessity for action by showing the world pounce on the empire. Zou's map graphically dissolved former cartographic hierarchies between 'us' and 'them' by visually merging China into the Asian continent. Tu's maps, on the other hand, put the country back in a more central place and fixed its territorial borders with a conspicuous red outline, while at the same time visually inflating its influence and territorial extension. Despite the changes in cartographic style and techniques, as well as varying degrees of global consciousness visible in the images, these maps nevertheless maintained to transport certain visual features and conceptions which were rooted in the country's cartographic past, such as inserting non-geographical textual information all over the image like the political cartoon, depicting Beijing as the prime meridian like Zou's world map, or graphically referring to tributary states of the empire like Tu's cartographic visualization.

Maps imagined and realized by these actors, furthermore, transported national and global imaginaries, which were used for the education of young people at the time of their production, like the cartographic works of Zou and Tu, and partly even found their ways into the educational media of the PRC, like the revolutionary's cartographic cartoon. Being used for educating young people, these maps were also a means for producing, embedding and disseminating what Assmann (2011) has called the 'cultural memory'. Memory, as Assmann put it, "is what allows us to construe an image or narrative of the past, and by the same process, to develop an image and narrative of ourselves" (Assmann 2011: 15). Thus, while the maps discussed in this paper reflect evolving self-perceptions of China in the world during the late nineteenth and early twentieth centuries, they have also played a role in shaping today's national 'memories' and self-perceptions of China in a globally entangled world.

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A Disastrous Project: C. P. Keller and the Fortification (Plans) of Bimilipatnam

Jeroen Bos

Abstract Leiden University Libraries has two remarkable fortification plans in its collections. They depict the village of Bimilipatnam under VOC rule. After a ransack by plundering Maratha troops in 1754, the local Mughal-regent allowed the Dutch to construct a stronghold in the village. VOC-authorities commissioned military engineer Coenraad Pieter Keller to survey the plot of land allocated to them and deliver plans and a proposal how this fortification could be constructed. The eventual fort was poorly constructed and collapsed two times. Keller was scape-goated by his superiors. He did not let the allegations pass and defended himself at Batavia. His written apologia has been preserved and provides unique insights in the career of a hybrid mapmaker in colonial service. By careful archival research we can reconstruct the context in which the plans were produced, interpreted by their intended audience and circulated until it was acquired by Leiden University Libraries.

1 Introduction

'It has been decided that Coenraad Pieter Keller and his son-in-law Godfried Friedel will be pardoned from the death penalty for the first and corporal punishment and a ten years banishment to the island of Edam for the latter. They are considered employable again for Company service.'[1]

Thus the Governor-General and Council in Batavia concluded in the board meeting of March 27, 1767 concerning a prolonged case between the Dutch East India Company (abbreviated VOC, after *Vereenigde Oost-Indische Compagnie*)

[1]To be found in: ID-ANRI_K66a_NL, inv. nr. 1043, fol. 204. For the consultation of the VOC archives in Jakarta, see: Balk (2007). For the consultation of the VOC archives in The Hague, see: Meilink-Roelofsz et al. (1992).

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and the military engineer/merchant C. P. Keller. The latter was accused of poor execution when constructing a fortress at the Indian village Bimilipatnam (present-day Bheemunipatnam). In the eyes of Batavia the costs of the fortification were exorbitant. To make things worse, the whole construction collapsed within years after completion. The engineer was scapegoated by his superiors at the Coromandel Coast, who accused him of self-enrichment while damaging the interests of the VOC. He was sent to Batavia, the main settlement of the Dutch in the East, to defend himself before the highest Dutch authorities overseas: the High Government (*Hoge Regering*), consisting of the Governor-General and his council.

When Keller was commissioned in 1756 to survey a plot in the village of Bimilipatnam and deliver a project for the construction of a VOC fortress there, he could not foresee this disastrous aftermath. The resulting two plans which he delivered that year for further decision-making by his superiors are now part of the map collections of Leiden University Libraries.[2]

In this contribution we will take a closer look at these two fortification plans. In doing so, this case study will be a contribution to the growing, but still small, body of literature concerning military mapping under VOC auspices.[3] When it comes to the cartographic legacy of the VOC, studies about the navigational charts used by pilots are abundant.[4] It is a logical consequence, considering the maritime character of the long-distance trading company. However, next to being a sea power and relying on accurate navigational charts to sail the routes to and from Asia, the VOC—certainly in the eighteenth century—became a territorial power. For judicial reasons, large scale maps of the lands under VOC rule were needed. Surveyors and engineers, such as Keller, were attracted to provide in this growing demand for accuracy.

An important factor in studying the cartographic legacy of the VOC is the availability of the institutional archives. In the nineteenth century, after the demise of the Company (1602–1799), many maps and their accompanying reports in the

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[2]The two maps have the following descriptions and signatures: Plaan van het dorp Bimelepatnam en 'SEComps. Loge (COLLBN 002-09-034) and 't Geprojecteerde fort te Bimlipatam (COLLBN 002-12-040). They are available as scans via http://www.atlasofmutualheritage.nl. Last accessed 10 Dec 2017.

[3]Especially historian Kees Zandvliet explored the manuscript fortification plans in his studies, but his main focus is on seventeenth century developments. See: Zandvliet (1998, 2002). Concerning the eighteenth century historian Erik Odegard has very recently published an interesting contribution: Odegard (2017). An architectural survey of overseas Dutch heritage is provided in: Temminck Groll (2002). Lastly, the publication of a series of VOC manuscript maps should be mentioned. Between 2006 and 2010 in seven separate volumes, following geographical lines, the complete known cartographic legacy of the VOC was reproduced in a bilingual publication: van Diessen (2006–2010).

[4]Among many others, map historian Günter Schilder has for many decades devoted himself to the study of VOC navigational sea charts. For a fairly recent overview of vellum charts, see: Schilder and Kok (2010).

archives have been separated.[5] This is also the case with the Bimilipatnam plans. By careful archival research the context in which the plans were produced and used can be restored. In doing so, we will gain insight in the decision-making process within the Company, the reliance on knowledge from mapmakers in situ, the professionalization of colonial military engineers around 1750, and the condition of the VOC where late eighteenth century military matters are concerned. Because of the disastrous aftermath of the project a unique view on the career of a Company mapmaker is provided. An important source will be the apologia (*verweerschrift*) Keller wrote to justify his actions before the High Government.

2 In Asian Waters

2.1 The Dutch at the Coromandel Coast

The Dutch trading posts at the long Coromandel Coast were among the earliest overseas settlements since the foundation of the VOC in 1602 (Fig. 1).[6] Attracted by the textile-producing districts pilot Paulus van Soldt made a call at the important port city of Masulipatnam in 1605. This initial contact was followed by a permanent office at Petapoli in 1606. In 1610 the new VOC establishment in Pulicat was made the administrative center of Coromandel, first under a director, and from 1616 onwards under a governor. A relatively large fortress was erected at Pulicat to protect commercial interests in the district and repel European competitors. Next to the Portuguese, the Dutch had to tolerate Danish and British presence, followed in 1673 by the French when Pondicherry was established. Shortly after 1690 the main settlement of the Dutch at Coromandel, on the advice of commissioner-general Hendrik Adriaan van Reede tot Drakenstein (1636–1691), was moved from Pulicat to the more southern located town of Negapatnam, away from the army routes in the north. The districts in the northern part of Coromandel were frequented by military unrest in the 1680s, culminating in the complete annexation of Golkonda by the Mughal empire in 1687. Nevertheless, the unrest remained after this annexation and would occasionally paralyze the region in the eighteenth century. The Mughals had overreached and could not respond properly to several regional powers seizing their chances. In Dutch reports this unrest and the consequently continuous changing regimes with which to deal with are indicated as the main reasons for the stagnation and, ultimately, decline of the trade profits at the Coast.

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[5]Archivist P.A. Leupe in 1867 published the catalogue Buitenlandse Kaarten, finishing a project for the National Archives of the Netherlands in which the maps of the former VOC and WIC were seperated from the archives. A decision which made sense in the late nineteenth century, but regretted nowadays. Mainly because the context between map and original report is broken, and only with painstakingly archival research can be reconstructed.

[6]For an introduction in the history of the Dutch East India Company, see: Gaastra (2012). For an overview of the Dutch trade at the Coromandel Coast, see: Arasaratnam (1976).

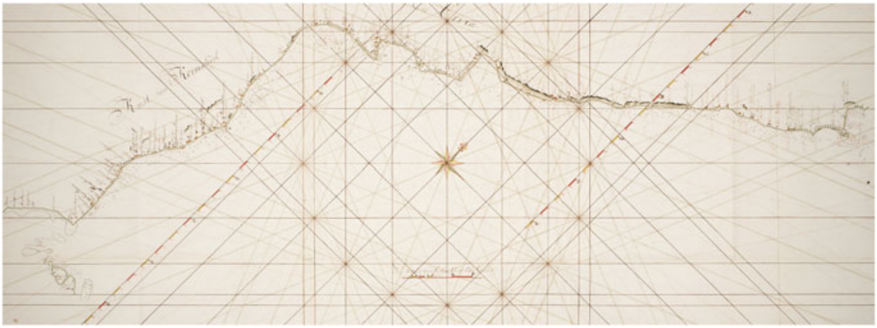

Fig. 1 Coastal chart of Coromandel and Orissa by Gerrit de Haan, 1761 (Nationaal Archief, 4. VELH 156.2,6)

It should be noted, however, that the repeated references to internal turmoil was a proven distracting tool. The VOC servants at the Coast all too eagerly pointed to an external force to explain losses in their reports. It was taken as an established fact that the arbitrariness of the upcoming local rulers led to fluctuations in the revenues. But since this 'explanation' was both used in times of turmoil and more peaceful periods alike, it actually explains nothing and is a fallacy. Above all, it expresses the Orientalist view on trade in India (Gommans et al. 2010: 24). Still, recent studies indeed show the stagnation and decline of Dutch profits at Coromandel (Jacobs 2006). Especially during the last quarter of the eighteenth century the VOC was irrefutably overshadowed by the British and French competitors.

2.2 *A Trading Post at Bimilipatnam*

First records of a Dutch settlement in the village go back to 1652. The reason for a permanent post are still vague, but it seems that the Dutch were able to secure trading rights from the local Mughal-regent. They were keen to possess a safe anchorage along the Coromandel Coast on the route between Ceylon in the south and Bengal in the north. Their larger trading posts at Pulicat and Negapatnam on the southern Coromandel could not shelter the vessels during heavy storms. Bimilipatnam offered protection against most perils on sea. Concerning products of trade, the village was a centre of rice cultivation and provided the Dutch settlements on Ceylon and even Persia in times of drought or crop failure. In 1701 Pieter van Dam (1626–1706), the long serving head secretary (*advocaat*) of the VOC, handed his monumental manuscript *Beschryvinghe van de Oostindische Compagnie* to the Gentlemen Seventeen (*Heren XVII*)—the executive board of the VOC, residing in the Dutch Republic—to serve them as a useful manual on many important topics concerning the long-distance trading Company. On the trading post at Bimilipatnam he used few words (Stapel 1932: 162): '…never of any importance, serving mainly as pantry for Ceylon. In earlier years shiploads full of rice where transported from this place.'

Still, besides providing rice, trade was conducted in modest quantities. Another trading product was textile, although it never came close to the amount of *kleedjes* traded at the southern settlements. Finally, I like to mention the trade in *lak op stokjes*, which is shellac, made from the excrement of bugs, and sold with much profit in Persia. But this commodity was really hard to get. Only small amounts were sold to the Dutch. For almost a century trade was conducted from a lodge, which was constructed to protect the commodities and house the handful of servants, although it had only minimal defenses. From accounts by Daniel Havart (1650–1718) and Francois Valentyn (1666–1727) the number of European servants was 3 to 4: the head (a junior merchant), his assistant (*secunde*), and two administrators, together with 20–30 local hands (Havart 1693; Valentyn 1724–1726).

3 An Offer Reluctantly Acceptated

In 1754, Bimilipatnam suffered the consequences of the prolonged war between the Mughals and Maratha's. The village was pillaged and the VOC lodge was looted and burnt. After this occurrence, much deliberation was given to the question whether the post should be re-established. The regent, Visia Ramarasu, feared that the permanent departure of the Dutch would ruin local economy and offered them the right to construct a fortress in the village to safeguard their commodities (s' Jacob 2007: 172).

Initially, this offer was not taken up. Before the VOC-servants at Coromandel committed themselves, it was decided to carefully consider all options. It seems that Batavia preferred a fortification at Jaggernaikpoeram and commissioned the engineer Coenraad Pieter Keller, stationed at the island of Ceylon, to the Coromandel Coast. He was to survey and report about the possibility of constructing a fortress at Jaggernaikpoeram. In the end, the decision was made to stay at Bimilipatnam and to construct a stronghold in the village. The decisive argument was that the investments in Bimlipatnam were too high to simply withdraw, even with the looting of the goods and a burnt down lodge.

Batavia agreed to take the offer from the local Mughal-regent and commissioned Keller to survey the location and determine how a stronghold could best be constructed. The engineer was not entirely free in his judgement. He had to deal with restrains from both the regent as well as Batavia. Visia Ramarasu determined the location on which the VOC was allowed to construct this fortress; Batavia ordered to construct it in the most economical way possible (s' Jacob 2007: 174).

Batavia and Keller already had a history. Between 1748 and 1750 the engineer constructed a fortress at Sadraspatnam, an important post at the southern part of the Coromandel Coast. The costs exceeded the estimates, and Batavia blamed Keller, stating that the Sadraspatnam fortress was 'too beautiful, and thus too costly

(Schooneveld-Oosterling 2007: 47).' With this experience in mind, he was urged to keep costs at a minimum in Bimilipatnam.

4 A Detailed Look at the Plans

Let us take a look at the two plans. The first offers a general overview of the town with its immediate surroundings (Fig. 2). The projected fortress can be seen drawn in on the existing situation. The square ground-plan with four corner bastions and sides measuring 40 Rijnlandse roeden, or 150 m long, was a very conservative design (Temminck Groll 2002: 238; Gommans et al 2010: 381–382). In the Explanation, Keller wrote that the design was based on the principles of the famous French engineer Vauban.[7] The impact of this building on the village is immediately visible. For its construction, a lot of the existing infrastructure in the village needed to be demolished, among which a temple and many houses.

The map is richly annotated. Not only in the explanation, with remarks of military or architectural nature, but there are also handwritten notes all over the plan relating to everyday matters in Bimilipatnam. For example, we see the different water wells for the different groups living in the village. Wells for the different caste in Hindu society. The Fishers were to get their freshwater at the *Parraesche* well, the Brahmin caste at the *Brahminse* well, and the Dutch (who were not considered pure) were grouped together with the Hindu middle-class and had to get freshwater at the *Jentiefse* well (van der Pol 2011: 70).

Similarly, not necessarily of much importance for the intended audience of this map, the designated locations for ceremonial burning of the corpses are indicated. And, finally, Keller had much attention for the several places of worship that could be found in and around Bimilipatnam. We can only speculate about the abundance of annotations on this general map, but it has probably to do with showing expertise to his superiors. By locating and describing all these spots, Keller convinced the viewer that he was actually in situ and had measured the complete village, not only around the immediate area of construction, but in the surrounding area as well.

The second Bimilipatnam plan is truly military in nature (Fig. 3). A closer look reveals the inner buildings of the fortress, and their intended use. Every room, however large or small, is annotated. It even has affixes attached to them, revealing the usage on ground level and first floor. Besides the usual warehouses, barracks, living spaces for the head and the assistants, we see room for cattle, small gardens, and the water wells. It is gruesome to recognise the word '*slaafskamer*' in a smaller room, confirming the use of enslaved people to carry out several duties for which the Company could or would not hire local hands.

[7]The fortification concepts made by military engineer Vauban (1633–1707) would dominate the education of military engineers for nearly the complete eighteenth century. His principles were imprinted in the mind of every young student of warfare. So, it does not surprise that Keller at least pays lip service to the famous French marshal and engineer.

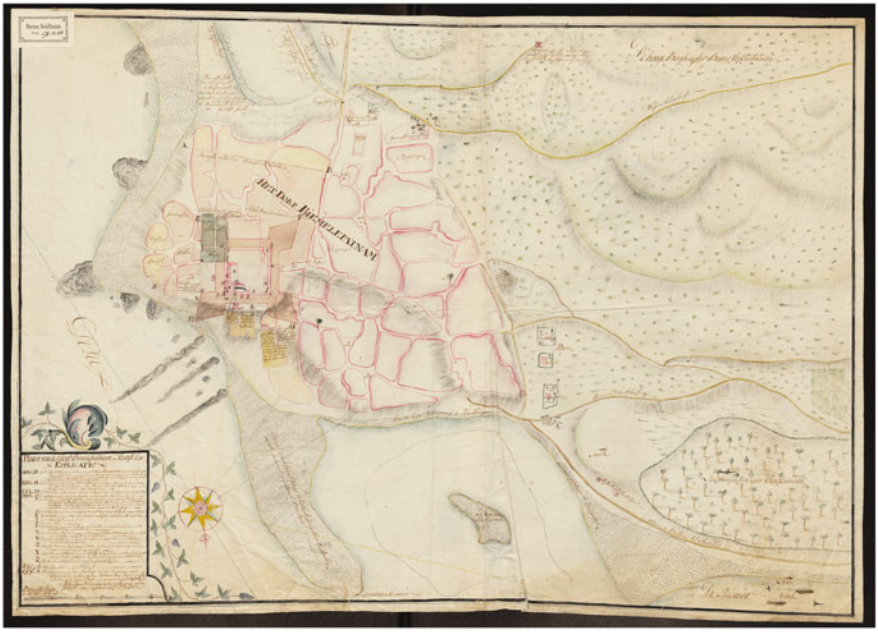

Fig. 2 Plan of the village Bimilipatnam and the Honourable Company's lodge by C. P. Keller, 1756 (Leiden University Libraries, COLLBN 002-09-034)

Based on the plans and report by Keller, the project was eventually approved and work started in 1758. Keller did not oversee the execution for long, as he was already commissioned at Negapatnam where his services were requested. The engineer was replaced by Adam Gotlieb Henk, a man of which little to nothing is known from the records. He is mentioned as an *inlander*, a local.[8] Henk would oversee the completion of the works at Bimilipatnam. The village was hit by strong rainfall in late 1759. First reports about the collapse of parts of the newly constructed fortress reached Batavia in 1760. With much dismay it was decided to proceed the work, but to cut even more on unnecessary spending. Keller was held responsible for the mess and a warrant to take him into custody was issued (s' Jacob 2007: 574).

[8]NL-HaNA, VOC, 1.04.17, inv.nr. 353.

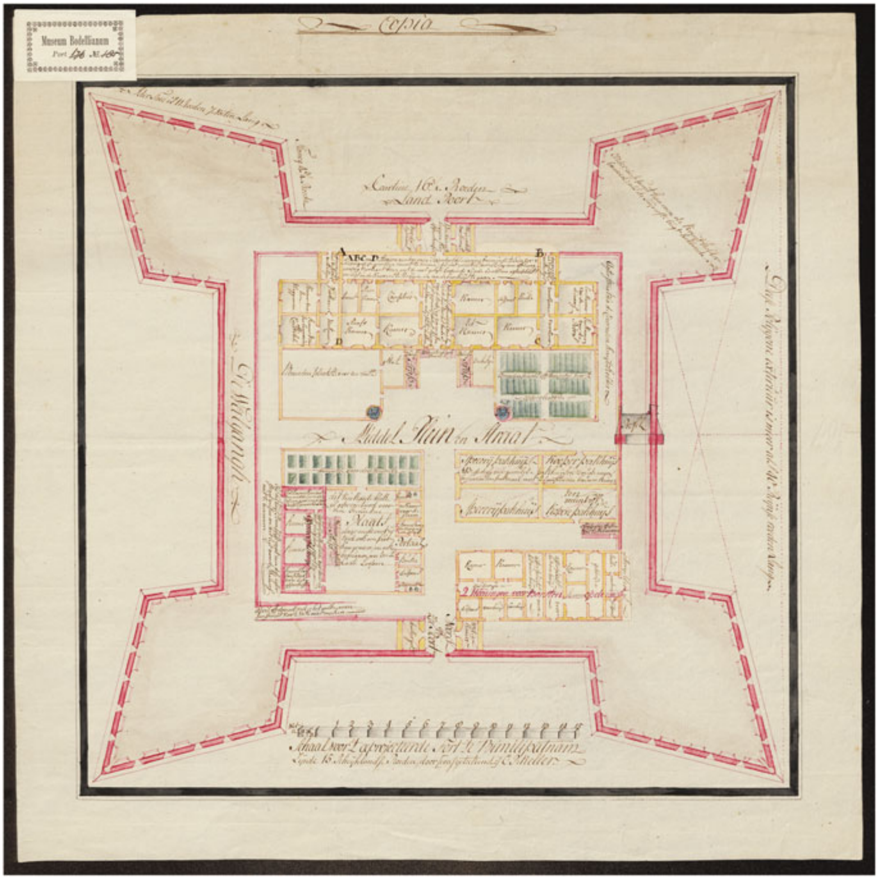

Fig. 3 The projected fort at Bimilipatnam by C. P. Keller, 1756 (Leiden University Libraries, COLLBN 002-12-040)

5 Coenraad Pieter Keller: A Hybrid Mapmaker in the Tropics

5.1 A German Soldier

Keller came from the German town of Rheinfels and enlisted with the VOC in 1735 as a *landspassaat*, which is a military position just above ordinary soldier. He was stationed at Ceylon, where he very probably was employed as a land surveyor. The first maps from his hand that have survived date from 1742/1743. He was involved in projects concerning irrigation and drainage works around Matar and the so-called Giant Tank project in the Jafnapatnam district. Land surveyors on Ceylon were mostly employed in civil surveying, because of the territorial control of the coastal districts of the island. It does not surprise to see Keller in the rank of lieutenant-dessave at the Colombo district. As already mentioned, in the years 1748–1750, Keller was commissioned to the Coromandel Coast to plan and construct a fortification at Sadraspatnam. Because of his long service, he was promoted by the Ceylon government in 1754 to the rank of full, or senior, merchant (Schooneveld-Oosterling 2007: 471). That is exemplary for most surveyors and engineers in VOC service. They did not always conduct full-time surveying work, but acted as land administrators, town builders and architects as well. These hybrid 'technocrats' were in high demand in the overseas settlements (Zandvliet 2002: 82). Some even engaged in commercial ventures. Preferably in Company service, although private trading was common practice among VOC servants. Officially forbidden, many could not make ends meet with the meager Company paycheck, or simply could not resist the high profits to be gained in private trading. Keller fits the model of a hybrid technocrat in colonial service, who also conducted private trade. He owned a ship with which commodities were shipped on his personal account (Nierstrasz 2012).

Historian Roelof van Gelder has extensively studied Germans in service of the Dutch East India Company (van Gelder 1997). In earlier times, German recruits were seen as little more than riffraff filling the ship holds, because they usually enlisted in the ranks of soldier. Van Gelder showed that for most Germans, even with a good education or background, it was impossible to be directly recruited in a higher rank. They were not allowed to fill these positions, as long as capable Dutchmen were available. In practice, this meant that talented and ambitious Germans had to work their way through the ranks, enjoying patronage along the line. Keller fulfills this description. Although his birthdate could not be traced, he must have been a young man when enlisting as *landspassaat*. Stationed at Ceylon, his superiors must have noticed his talents as he was quickly employed as surveyor. He could have lived a comfortable life had he not taken the commission to project and construct the fortress at Bimilipatnam.

5.2 *The Blame Game*

After the warrant was issued to take him into custody, Keller very probably panicked. The official records speak of his flight and desertion from Company service (s' Jacob 2018: 254). Because he did not show up at the tribunal in Negapatnam, he was convicted in absence. Keller received the ultimate penalty: a death sentence. His son-in-law had to undergo a corporal punishment, followed by a ten years banishment to and chained public works at the island of Edam. Keller went completely off-radar. Rumors even mentioned him to run away only to be killed by a local muslim regent (s' Jacob 2018: 505). Eventually, Keller saw no other option than to face the music. The authorities allowed him safe passage to Batavia where he could defend himself against the allegations brought against him. In early 1767 his case was discussed by the High Government. In their meeting of March 27, 1767, he was fully pardoned and deemed employable again for Company service. The latter indeed occurred, since he assisted in copying maps and plans at the *kaartenwinkel* [the central cartographic workshop] in Batavia. His signature can be found on a copied map of Cochin, dated October 1767. Full recuperation followed when Keller was commissioned to Palembang on the island of Sumatra to inspect the stronghold, which was in poor condition. The High Government gave him very specific instructions on the information they wanted to receive in their meeting of May 27, 1768.[9]

Before Keller received this final assignment, the High Government received a report about the deplorable state of the fortress at Bimilipatnam. The governor and council at Negapatnam decided to send a small commission led by lieutenant-engineer Gijsbertus Zeegeler to inspect the situation. It looks like one final attempt by the Coromandel government to blame and sentence the engineer for the mess at Bimilipatnam. The report once more devastated the reputation of Keller.[10] He was allowed to respond and his apologia is preserved at the archives in The Hague (Fig. 4).[11] It clarifies the course of events, from Kellers point of view. As he wrote, he was already in old age, serving the VOC for more than thirty years. But, even as the High Governement had already pardoned and reemployed him to work in the cartographic workshop, he could not let the accusations pass.

His defence consisted mainly on two assumptions. One is the fact that Keller could not be held responsible for the work carried out by Henk, for he did not follow the design by Keller. Secondly, the extreme weather conditions and the uneven terrain on the site are cited as being unsuited for the construction of a fort according to the European principles of military architecture. Surprisingly, the devastating report had no further negative repercussions for Keller. On the contrary, as we have seen, the High Government tasked him with the inspection of Palembang. It remains uncertain whether the partially rehabilitated engineer was able to complete this new assignment. No plans or reports from Palembang are known. Coenraad Pieter Keller died in August 1768.[12]

6 Epilogue

Bimilipatnam remained a touchy subject for the VOC. The village would again be hit by heavy rainfalls and an earthquake in late 1768. This time an even harsher report was written by J. E. Kuhn. Again, renovation work was carried out. The final blow came in 1781 when the British conquered the Dutch settlements at the

[9]ID-ANRI_K66a_NL, inv. nr. 1046, fol. 433.

[10]NL-HaNA, VOC, 1.04.02, inv.nr. 3197, fol. 481–495.

[11]NL-HaNA, VOC, 1.04.17, inv.nr. 353.

[12]NL-HaNA, VOC, 1.04.02, inv.nr. 6011.

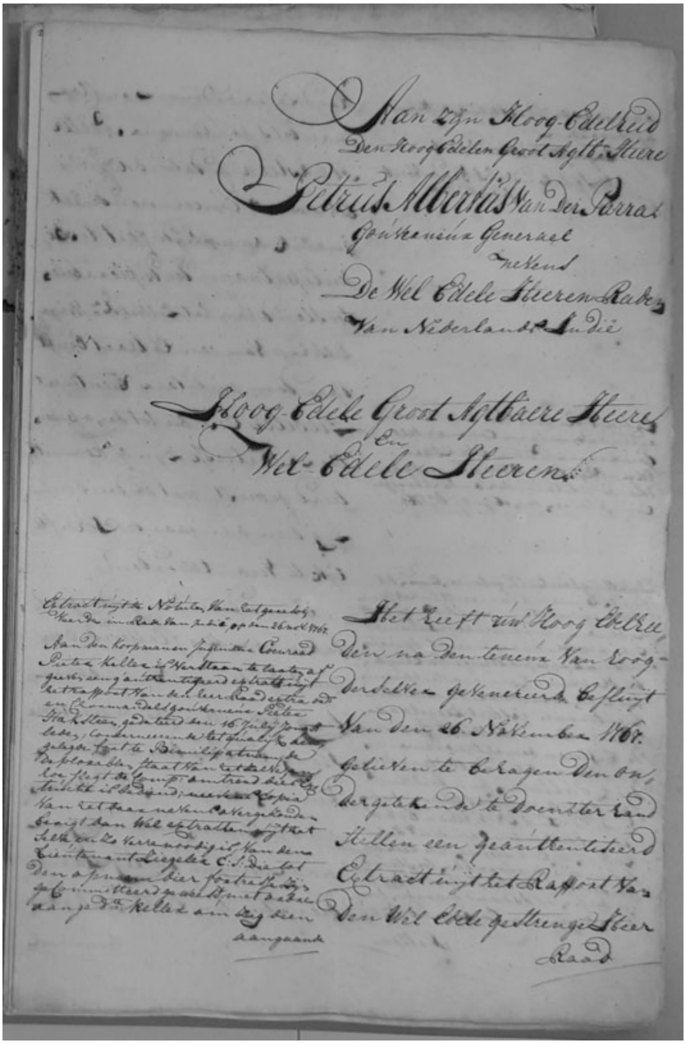

Fig. 4 Apologia by C. P. Keller, 1768 (Nationaal Archief, VOC, 1.04.17, inv.nr. 353)

Coromandel Coast during the Fourth Anglo-Dutch War (1780–1784). The stronghold was returned in 1785, but the bastions were made indefensible (Fig. 5). In the years after the war, the directors in the Republic and the High Government in Batavia wanted to get a realistic picture of the (potential) profitability of the various settlements at the Coromandel Coast. For this purpose, the *gezaghebber* (after the British gave the posts back to the Dutch in 1785, the position of governor was no longer granted and the highest position on this Coast was that of *gezaghebber*, director) and the chief factors were urged to compile reports in which the pros and cons of a closure were to be weighed up (Gommans et al. 2010: 373). However,

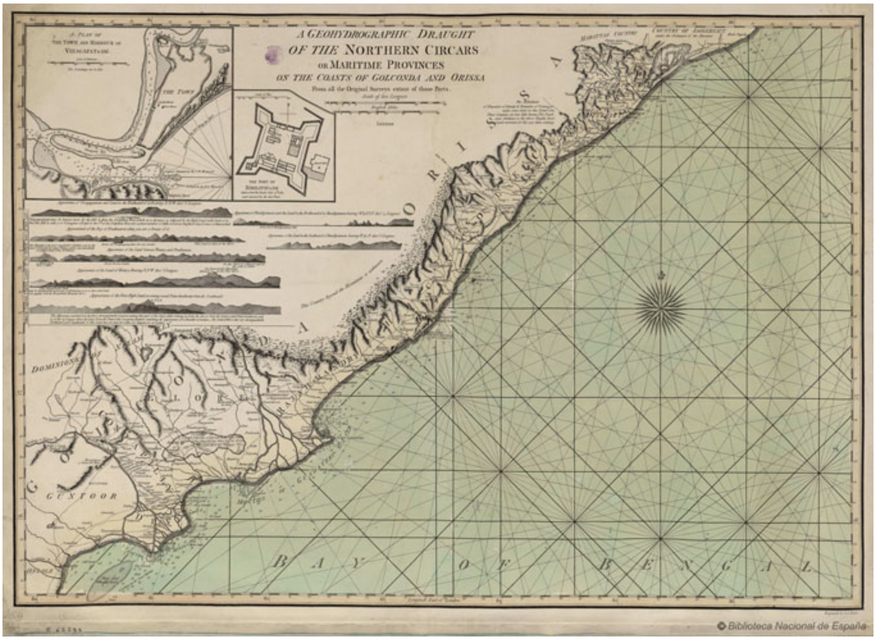

Fig. 5 A geohydrographic draught of the Northern Circars by Samuel John Neele, 1775–1781 (National Library of Spain, MR/6/I SERIE 50/289)

mainly because of the rigid attitude of the servants on the spot little came of the intended reforms. Before definite decisions were reached on the matter, the Dutch posts at the Coromandel Coast were taken again by the British in 1795, following the invasion of the Dutch Republic by the French revolutionary army. Nowadays, very little reminds of the former Dutch presence at Bheemunipatnam. Only the two remaining cemeteries with seventeenth and eighteenth century graves and tombs are in reasonable condition (Peters 2002: 149–154).

The engineer paid a heavy price for his miscalculations. Although the death penalty was never executed, for years he was on the run and lived in uncertainty. His reputation shattered and his revenues vanished, Keller was lucky to be reemployed by the Company in 1767. He undeniably made some major constructional mistakes when projecting the fortress at the spot he chose. However, he had to work with the constraints posed upon him by the local regent, as well as the VOC. Although he was pardoned by the High Government, he never regained his former standing. When the German military engineer Carl Friedrich Reimer visited Sadraspatnam in September 1790 he was very appreciative about the fortress constructed almost half a century earlier by Keller, his fellow countryman, calling it 'without question the most elegant and beautiful of all the Company's possessions.'[13]

The fortification plans of Bimilipatnam were acquired by Leiden University Libraries via Johannes Tiberius Bodel Nijenhuis (1797–1872). He bequeathed his cartographic collections, called *Museum Geographicum Bodellianum*, to the Leiden library. It is estimated that the total collection consists of around 50,000 maps, 300 atlasses and 22,000 topographical prints and illustrations (Storms 2008). It is very difficult to reconstruct the provenance of the VOC maps within this collection. In 1996, former map curator Dirk de Vries compiled a catalogue of the 79 sea charts in the Bodel Nijenhuis collection (de Vries 1996). He also attempted to trace the origin of the charts, maps and plans, but this search proved unfruitful. De Vries argues that it is not impossible that Bodel Nijenhuis acquired the maps when the Ministry of Colonial Affairs disposed of a portfolio of 'abundant or obsolete' maps in 1821. A more likely way of acquiring the maps, according to De Vries, is via auctions and selling by private collectors. Already before the demise of the VOC, the 'secret' maps circulated among collectors. Bodel Nijenhuis wrote annotations on maps concerning provenance. It is frustrating to note that these are missing on the VOC maps, which leaves us to speculate on their provenance. Concerning the Bimilipatnam plans specifically, the word (COPIA) on the detailed fortress plan is the only clue we have that these plans were copies sent to the Republic to accompany the reports that were to be analyzed by the Gentlemen Seventeen themselves.

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[13]NL-HaNA, VOC, 1.10.03, inv.nr. 87, I, fol. 53.

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Inventing a Cartographical Image for Postcolonial India: European Models and the Politics of National Identity

Arundhati Virmani

> *Writing has nothing to do with meaning. It has to do with land surveying and cartography, including the mapping of countries yet to come.*
>
> Gilles Deleuze

Abstract In 1953, the government of independent India sponsored the production of a national atlas written in the new national language, Hindi, under the direction of the geographer S. P. Chatterjee at Calcutta University. To what extent did the Atlas reconcile nationalist sentiments of the 1950s with a determination to break away from the colonial frame with its dominant scientific practices? From this perspective, a study of the first National Atlas elucidates the connections and circulations of intellectual ideas, technologies and practices in a heightened nationalist context. For the Indian state, it represented a tool for national pedagogy through the production of specific images of the country's physical, economic and social features. A detailed analysis of the stages of production, the final choices of data, format, language and scale show how broader scientific exchanges could take place within the new constraints of state goals of development and a bureaucratic framework of action. The first atlas represented a crucial moment for establishing precedents of circulation and exchange of ideas. It appears as a somewhat paradoxical production. On the one hand, it was the result of a state directed and controlled enterprise. At the same time, it benefitted from accelerated academic and scientific exchanges and collaborations, which, in the field of geography, resulted in a common elaboration of forms of normalization and standards, particularly evident in cartographical productions.

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1 Introduction

Cartographical endeavours played a critical role in the British takeover of India, justifying and legitimizing this expansion, narrating a story of possession but also progressively constructing an Indian empire through a rich production of maps. A pantheon of cartographic heroes, surveyors, geographers, engineers, statisticians, astronomers would leave an indelible imprint on the Indian Empire. Perhaps the most lasting mark was left by George Everest, Surveyor General of India from 1830 to 1843, whose name would crown a mountain summit thus far known simply as Peak B. Figures like James Rennell, first surveyor general of the East India Company in the 1760s, Colin Mackenzie, famous for his topographical surveys, William Lambton and others brought home to schoolboys and later schoolgirls distant British possessions: Calcutta, Bombay, the Himalayas… The relationship between empire and maps, maps and a British sense of identity highlighted the real, persuasive and symbolic power of maps for colonial governance (Kalpagam 1995; Edney 1997; Barrow 2003).

Within a decade of achieving independence in 1947, the first government of India decided to produce a national atlas. The initiative came from the geographer S. P. Chatterjee, based in the geography department of Calcutta University, and well-known for his regional atlas *Bengal in Maps* (1949). On his return from the International Conference of Geographers at Washington in 1952, and after having studied the methods employed in other countries to prepare their atlases, he submitted a scheme for a National Atlas of India to the prime minister Jawaharlal Nehru. Nehru was quick to appreciate the importance of the proposal. The atlas fitted into the national projects of reconstruction and development to advance the country into an age of scientific and technological progress. His strong desire to affirm India's independent, sovereign and equal status with the developed countries of the world recognized in the future national atlas a significant international visiting card. The project was at once included in the country's first Five-Year Plan, a system of centralized and integrated economic development adopted in 1951. An advisory board was appointed by the Government of India in 1953 to work on the scheme. This would operate under the chairmanship of the Deputy Secretary to the Ministry of Natural Resources and Scientific Research, T. Gonsalves. The board consisted of representatives from different government departments as well as academics. Key figures included besides S. P. Chatterjee himself, geologist D. N. Wadia, former editor of the *Calcutta Geographical Review*, now based in Bombay, or the geographer J. M. Sen also from Calcutta University (*Times of India*, 22 Sept. 1954: 8).

2 The Political Dimensions of a Scientific Project

The empire had produced numerous maps and geographies of the subcontinent. India had been the first country outside Europe to be accurately mapped since the eighteenth century. British military, and administrative needs further accelerated the demand leading to route surveys, or the triangulation of the peninsula since 1802 onwards from the baseline near Madras. The Indian government thus inherited a rich stock of regional maps and knowledge that provided precious details of general geo-physical features, including boundaries, coastlines, climate, rivers, mineral or vegetable productions, population, or religious identities. But at no moment had all this data been organized in a rational and uniform manner to present a global geographical overview of the entire subcontinent. In other words, there did not exist a national atlas of India. Perhaps this was not so astonishing from the British colonial point of view,[1] but even Indian nationalists who fought to develop and promote the future nation through their political programmes and agendas had ignored the political interest of such a proposal. Indian geographers, scientists and engineers were still bound to the architecture and administrative machine of imperialism through the network of university geography departments (Chatterjee 1963; Singh 2009). With the atlas project the government now intended to recover control and ownership of its cartographical representations, hitherto managed by colonial imperatives and perspectives. Its benefits were multiple.

First, it would present the new nation with its recently drawn external and internal boundaries to Indian citizens, confronting them with their present and future spatial reality, presenting information on the climate, economy, culture, geography etc. Recent territorial traumas provoked by the Partition infused a greater urgency to the understanding of space and spatial relationships. Its immediate utility would be to assert external claims over territories that were still disputed (Kashmir for instance) and other imprecise boundaries (particularly in the northeast). India had also witnessed significant internal territorial readjustments as the older British regional provinces were reshaped into states and former princely kingdoms were absorbed in them. A national atlas would present the new political, administrative hierarchies, give a visual force to the idea of centre and peripheries, assert territorial and political limits, but also reassure states of their rights to river waters and resources.

Secondly, this geographical compilation of India's existing resources with the methods and techniques of an applied geography had an obvious pragmatic value. For the Planning Commission instituted in 1950 to centrally manage the economic development of the country, geographic knowledge was useful, indeed necessary

[1]Even Britain opened a serious debate on its own national atlas only in the 1940s. A first proposal pioneered by the British Association in 1938 was succeeded by concrete plans from the Royal Geographical Society in 1944. The project would be stalled by the war and when the first sheets of the National Planning Series were produced it was not acknowledged as a national atlas. Ultimately, a British national atlas was produced only in 1951.

for a balanced regional development. Chatterjee presented it as an efficient tool to help resolve many national problems, such as floods, soil erosion or agricultural land use. The pressure of growing population and urbanisation on land resources demanded a stock-taking of different uses to which land was being put so that misuses could be avoided or idle land put to some use.

Thirdly, it permitted a psychological break from imperial cartographical productions. Abandoning the imperial system of measures, the Atlas would use the metric system introduced in Parliament in 1956. The Indian government intended to terminate the existing diversity of weights and measures in different parts of the country in favour of a uniform standardized system. Anticipating this change planned for October 1958 the atlas used metres for contours and heights, kilometres for distances, millimetres and degrees centigrade on the climatic maps, hectares, metric tons and kilograms in the production maps. It upheld the principle advocated by Indian scientists that scientific research was by its nature international and hence the adoption of agreed standards for all physically measurable quantities was essential for its progress (*The Times of India*, Sept. 30, 1958).

An equally significant break was the decision to employ the newly recognized national language Hindi.[2] The texts were to be entirely in Hindi though an outline map with all place names in English would make it easier for non-Hindi speakers. The long descriptive text both in Hindi and in English rendered the atlas somewhat accessible for international usage. The question of India's national language had exploded in Parliament as a major bone of contention, opposing supporters of Hindi versus defenders of minority languages. Hence, the government's decision to adopt Hindi as the language for the national atlas, with the promise of a later English version (finally published in 1986), placed the language question beyond a narrow, regional patriotism, or party and ideological lines.

Such multiple reasons of national pride, economic pragmatism, or political calculation motivated government funding of the enterprise. India's national cartographical impulse was neither unusual nor daring. This was a classic path to an affirmation of a national identity as patterns of modern European state emergence showed. A first initiative of a modern national atlas had come with the Atlas of Finland, published by the Geographical Society of Finland in 1899, as a way of claiming recognition of its national status while it was still under Russian political control (Palsky 2018). Other initiatives followed, although older European nations like Great Britain or France did not follow the international trend to produce this type of geographical tool (Salichtchev 1960, eng. tr. 1972). Poland, Hungary, Bulgaria and Czechoslovakia, or Rumania offered more recent examples. India's decision to enter 'the Age of National Atlases' was incontestably a self-conscious political act to assert its membership of this world community of modern nation states.

[2]In 1951, the Central Parliament of India with its members representing the fourteen major languages of the Union of India accepted Article 343 of the Constitution. (1): The official language of the Union shall be Hindi in Devanagari script. A period of fifteen years was allowed for English to be used for all official purposes. This would be extended in the face of opposition and English became the associate additional official language.

S. P. Chatterjee as Director of the Project headed a small team of co-workers. In April 1954, the Ministry of Natural Resources and Scientific Research sanctioned seven posts on a temporary basis and 56 additional posts for the project. The Geography Department of the Calcutta University housed the organization. The Survey of India (founded in 1767) with its offices at Dehra Dun, in the state of Uttar Pradesh, now Uttarkhand, was mobilized to produce and print the maps. An institution named the National Atlas Organization was created in August 1956. In building this organisation Chatterjee considered different institutional models of countries that had produced national atlases. These ranged from commissions of geography in France to Institutes of Geography working under the Academies of Sciences in the Soviet bloc (Nag 2016). He finally opted in favour of an Institute of Geography, entrusting the cartographical exercise to geographers. On August 18, 1956, the government sanctioned a budget grant of 1,243,000 rupees for 1956–57. The atlas was to be produced in twelve months. To remain within the deadline Chatterjee succeeded in mobilising different state institutions. The Geographical Survey of India completed geological mapping of more than 6,000 square miles in different parts of Andhra, Assam, Bihar, Bombay, Madhya Pradesh, Madras, Orissa, Uttar Pradesh and West Bengal. He also benefitted from an initiative of P. C. Mahalanobis, scientist and statistician,[3] whose Indian Statistical Institute started the Regional Survey Unit in 1956 thanks to the Colombo Plan under the direction of geographer A. T. Learmonth from Liverpool University.[4]

The usual difficulties and challenges of working within a bureaucratic framework dogged the atlas. By September 1954, the money had not yet been received, stationery was lacking and so was money for postage. The staff comprised only two technical assistants, deputed by the Government of India. Chatterjee, wishing to undertake a tour of the country to collect data, was advised by the government to defer his tour and instead rely on state responses to the circulars sent to them (*The Times of India*, Sept. 22, 1954; Apr. 4, 1957).

Nevertheless, despite these delays and obstructions the work was ultimately completed and the atlas produced in 1957.

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[3]Founder of the Indian Statistical Institute, Calcutta in 1932, which was declared an institute of national importance in 1959, Mahalanobis introduced the concept of pilot surveys applied to estimating crop yields and sampling methods. He was a member of the planning commission in independent India.

[4]A Commonwealth Conference of Foreign Ministers, held in Colombo, Sri Lanka in 1950 proposed a framework for international cooperation to provide assistance from developed to developing countries that included transfer of physical capital and technology including skills development. It was called the “Colombo Plan for Cooperative Economic Development in South and Southeast Asia.”.

3 Bharat Rashtriya Atlas

This first National Atlas was of large size—26 × 17 inch—with a deep blue hard cover. Its title, *Bharat*, in Devanagari script below the recently chosen state emblem was adapted from the famous lion capital placed in the Buddhist site of Sarnath by the Mauryan emperor Ashoka (third century B.C.) accompanied by the words *Satyameva Jayate* (Truth alone triumphs) (Fig. 1 *Front cover*). The decision to use *Bharat* and not India carried a particularly strong symbolic message. Much debate had ensued in Parliament in 1949 about the name for the future country. Some felt the continued use of *India* was too close to an imperial past. Hindu members argued for the name *Bharat*, after the mythological king credited as being the founder of the first dynasty ruling over this vast kingdom. It was felt to be more befitting of Indian history and culture especially since it was found in ancient Hindu literature. Nehru vigorously opposed this demand, arguing that in doing so, India would be creating some legal and international problems for itself. Indeed, many of the former treaties and accords had been made with India, and its membership of several international committees and organisations would have to be re-negotiated. A compromise was reached by the constitutional adoption of 'India, that is Bharat' (Article 1.), which pacified Hindu

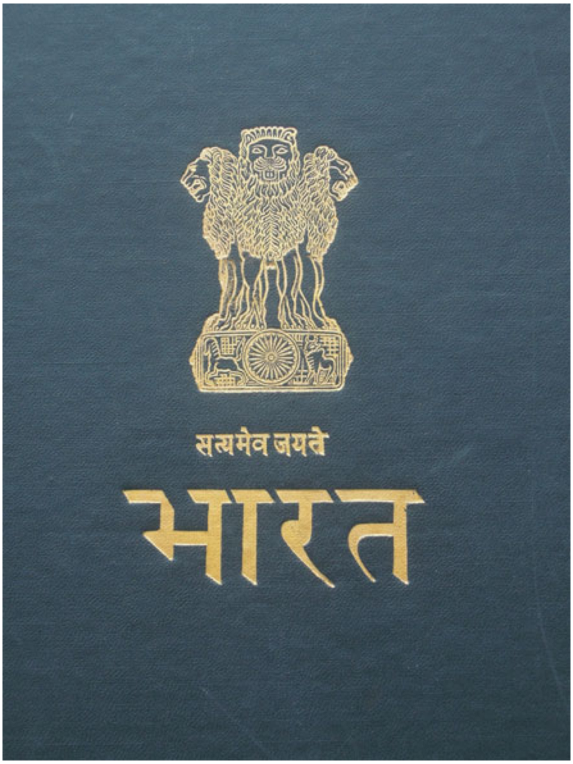
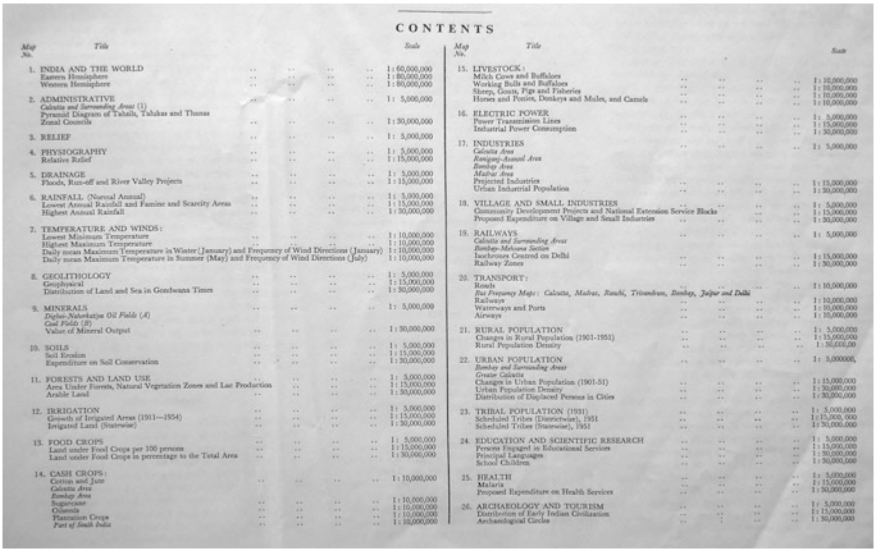


Fig. 1 Cover of the national atlas, 1957



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Map No.	Title	Scale
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	Eastern Hemisphere	1 : 80,000,000
	Western Hemisphere	1 : 80,000,000
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	Pyramid Diagram of Tahsils, Talukas and Thanas	
	Zonal Councils	1 : 30,000,000
3.	RELIEF	1 : 5,000,000
4.	PHYSIOGRAPHY	1 : 5,000,000
	Relative Relief	1 : 15,000,000
5.	DRAINAGE	1 : 5,000,000
	Floods, Run-off and River Valley Projects	1 : 15,000,000
6.	RAINFALL (Normal Annual)	1 : 5,000,000
	Lowest Annual Rainfall and Famine and Scarcity Areas	1 : 15,000,000
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	Daily mean Maximum Temperature in Winter (January) and Frequency of Wind Directions (January)	1 : 10,000,000
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	Expenditure on Soil Conservation	1 : 30,000,000
11.	FORESTS AND LAND USE	1 : 5,000,000
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	Changes in Rural Population (1901-1951)	1 : 15,000,000
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23.	TRIBAL POPULATION (1931)	1 : 5,000,000
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26.	ARCHAEOLOGY AND TOURISM	1 : 5,000,000
	Distribution of Early Indian Civilization	1 : 15,000,000
	Archaeological Circles	1 : 30,000,000

Fig. 2 Table of contents of the national atlas, 1957

opinion (Clémentin-Ojha 2014). Inside, the first page of the atlas announced: *Bharat Rashtriya Atlas* with an English translation underneath (National Atlas of India). The word atlas was retained though written in Devanagari. It could have been translated into Hindi by *Manchitravali*, which literally signifies mental panorama of images as map is *manachitra* or an image of the mind. However, though poetic, this would not have corresponded to international scientific requirements that both the government and scholars wished to follow.

Besides the seven-page long introduction, the atlas included very little text. It consisted of twenty-six sheets, each containing one large map of India accompanied by one or two inset maps (Fig. 2 *Table of contents*). The heart of the atlas consisted of twenty-one bright multi-colour maps representing India in its entirety on a scale of 1:5 million. On the same sheet they were accompanied by inset maps, which could be maps of India (on a scale of 1:15 or 1:30 million) or of smaller regions on a larger varying scale. Finally, four sheets treated some specific aspects, each containing four maps of India on an intermediary scale of 1:10 million. The entire atlas contained maps on four different scales. The projection used for all the maps was Lambert's conformal conic, a map projection system that produced lesser distortions, developed by the eighteenth century Swiss mathematician, physicist, and astronomer.[5]

[5]Lambert's projection is the basis for the cylindrical equal-area projection. He chose the equator as the parallel of no distortion. By multiplying the projection's height by some factor and dividing the width by the same factor, the regions of no distortion can be moved to any desired pair of parallels north and south of the equator.

The atlas began by situating India in the world, which in itself was not typical of national atlases. It presented one map of the world on a scale of 1:60 million and two maps of the two hemispheres on a scale of 1:80 million. It did not confine itself to a strict positioning of India in the world but showed some of the political and human relations India maintained with the world through statistical data about the Indian diaspora across south east Asia. Countries with Indian embassies were indicated: twelve in Europe, eleven in Asia, three in Africa, and two each in North and South America, without forgetting the seven high commissioners in Commonwealth countries, nineteen legations, three special missions, eight commissions, 21 consulates, four vice-consulates and three agencies.

This was followed by a political map showing the new administrative organisation of the territory according to the States Reorganisation Act of 1956. Indians could now visualize the new states such as Tamil Nadu, Andhra Pradesh and Maharashtra. That had recently replaced former British provinces and princely kingdoms: Such an entry characterised the presentation of a young nation that had just won its independence ten years earlier and which intended to affirm itself internally before its own citizens as well as externally to the world.

The rest of the atlas followed the traditional divisions of most other national atlases: physical geography, biogeography, economic geography and human geography.[6] In the 1950s, the National Atlas Commission of the International Geographical Union had established even more precise requirements. It laid down that national atlases should contain introductory maps (chorographic and locational, maps of physical environment, geology, soils, vegetation, climate, relief, hydrology etc.), population maps (distribution, density, social characteristics, ethnic composition etc.), economic maps (industry, agriculture, transportation, and commerce), maps dealing with cultural aspects (education, health, recreation); and of course political—administrative maps. The 1957 atlas of India did all this.

Successive maps were thematic, starting with physical features (maps 3–8), natural resources (9–10), going on to agriculture (11–15), which constituted the most important set of maps, energy (16), industry (17–18), transport (19–20), population (21–23). It ended by treating less habitual questions: education and scientific research (24), health (25) and finally archaeological heritage (26).

Maps of relief, physiography, drainage and rainfall, temperature and winds provided the basic information about the country's natural features, traditionally studied by physical geography as elements that determined the capacity of a country. A very detailed picture of these main elements was thus made available. For instance, all the main and minor drainage basins were demarcated, including details such as waterfalls, springs, lakes and marshy areas. Perennial and non-perennial streams were distinguished. Some explanatory elements confronted

[6]Cf. for instance, the presentation of the contents of the Atlas of France in Jan. 1933: Comité nationale de géographie (1933), «'L'Atlas de France' du comité national de géographie», *Annales le Géographie*, n° 236, pp. 186–188.

the areas of lowest rainfall from 1901 to 1940, with the frequency of famines. They allowed an identification of areas requiring irrigation facilities. New irrigation projects either completed by the new government of India or underway were indicated: Bhakra Nangal in Punjab, Kosi in Bihar, Damodar Valley and Mayurakshi in West Bengal, Hirakud including Mahanadi delta in Orissa, Chambal in Rajasthan and Madhya Pradesh, Tungabhadra in Mysore and Andhra Pradesh, Bhadra in Mysore, Nagarjunsagar in Andhra Pradesh and Kakrapara in Bombay. All these operations were summarized in a map on a national scale showing the growth of irrigated lands by state. The maps dealing with industry were coherent with the government's emphasis on technical progress, a roadmap Nehru was set on implementing. His option for heavy industry and imported technology to stimulate industrial development had become national policy, setting aside the Gandhian philosophy that privileged simple indigenous technology, local initiatives and the human spirit over machines (Indiresan 1987).

The cartographic production reflected an efficient collaboration between the different government departments and the administrative machinery. Whilst the temperature maps had been prepared by the Poona office of the Meteorological Department, the map on geo-lithology was an older British map, reproduced in black and white without any changes. In other spheres such as the inventory of the country's most important mineral resources, national objectives were more apparent. Map number 9 indicated not only the regional concentration of minerals (Bengal-Bihar-Orissa zone), workable mineral deposits, probable oil-bearing areas including areas where geophysical, geological and co-drilling work had been undertaken but also the location of working mines (Mysore, Godavari valley and Nellore area), as well as the distribution of workers in mines and quarries. It included the total value of mineral production in India for 1955 (Rs. 1056 million rupees). The soils map (No. 10), given the important part of soil in the agricultural economy of India, showed eleven soil groups and ten texture categories. An inset map indicated the intensity of soil erosion across the country, caused by misuses of land, excessive deforestation, overgrazing of hill slopes or monoculture. It highlighted the foothills of the Himalayas, the central Indian plateau as having suffered most. Another smaller inset map showed the expenditure per state likely to be incurred during the second five-year plan (1956–61) on soil conservation schemes. Bombay and Madras were expected to spend the maximum and Assam the least. The map of forests and land use (No. 11) used twelve colours to indicate categories of used land or waste as well as thirty-five dominant tree species and vegetation types. Using a cartographical representation invented at the end of the nineteenth century, a railway travel isochrones map gave Indians an idea of the strong contrasts in acceding the different parts of the country from the capital, New Delhi. Thus, the far south was 'closer' to New Delhi than the North-east (Fig. 3 *Railway isochrones map*).

The atlas devoted five maps to agriculture, hardly surprising for a country that was largely rural. In contrast, a map showing the distribution of all cities and towns with 5,000 inhabitants or more underlined the interest for a process that was changing the face of the country's future. This contrasted with the little attention given to the urban question during the nationalist struggle. At the same time, it

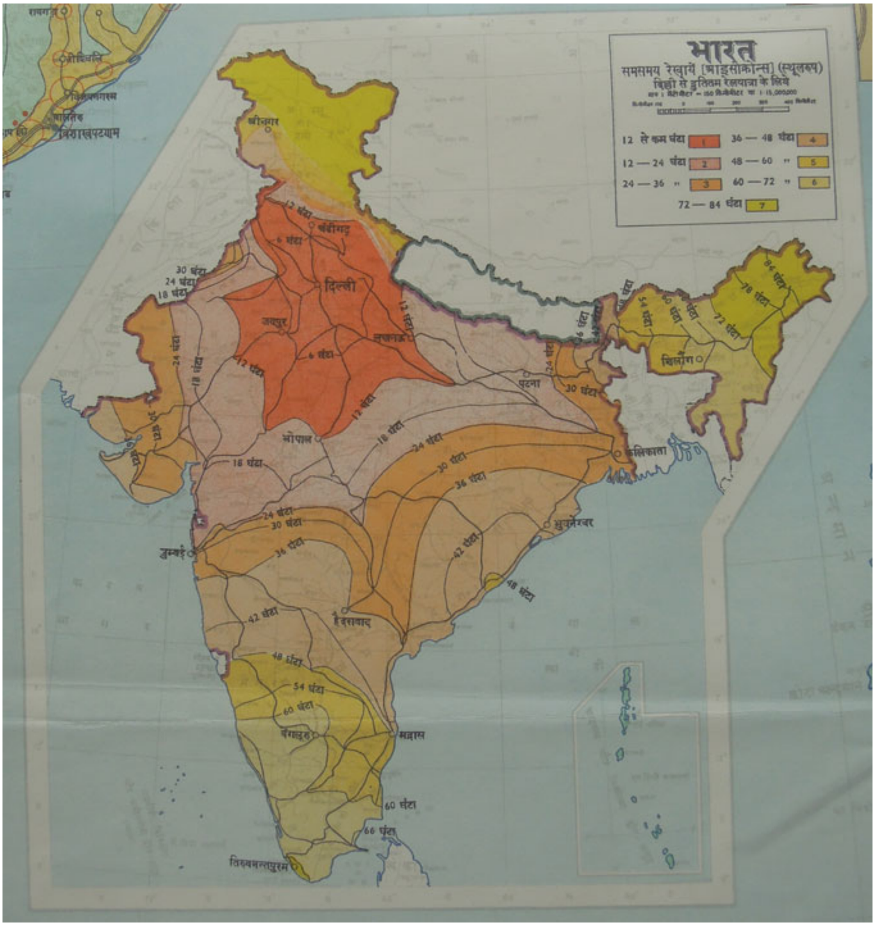

Fig. 3 Railway isochrones map

featured a map on tribal distribution, effectively and aesthetically presented through layer colouring, multi-coloured dots and proportional dots. The decision to include tribes in the overall presentation signalled a political approach to place the people of India at the same level of citizenship, even if this was more of an intention than an immediate reality.

In addition to these political imperatives and calculations, perspectives of development and planning were apparent in the choice of data sets to be represented. The health maps (No. 25) showed available medical facilities, classified ten types of hospitals according to the number of beds. They listed the number of medical colleges, dental colleges, centres of training, as well as colleges offering specialization in indigenous systems of medicine.

By and large, the atlas closely adhered to the spirit and intention of the five-year plans. It focused on stock-taking of natural and human resources, but equally on the potential for reconstruction and rehabilitation. Above all, it was conceived by Chatterjee as a tool of economic development. Developing countries were faced with the urgent task of producing new base mapping over vast areas to inventory natural resources and enable coordinated and integrated development. India's case was simpler because working documents already existed. Yet, suitable mapping was necessary for second stage development, which involved the construction of the entire economic infrastructure like roads and dams.

Last, but not least, it was a purely geographical atlas, without any sections dealing with the early stages of the history of India. Again, this reflected Nehru's political determination to lead India into an age of economic and scientific progress, without the burden of the past (Virmani 2002).

4 International Connections for a National Operation

Despite its national aspirations, an imperial imprint and the British cartographical heritage were duly acknowledged. S. P. Chatterjee presenting the atlas especially referred to the British geographer Laurence Dudley Stamp (1898–1966), who had in the 1930s developed a Land Utilisation Survey of Great Britain.[7] He had taught in Rangoon, where Chatterjee had also worked as head of the university department of geology and geography in 1928. Indeed, the principal organisations involved in Chatterjee's atlas, mainly the Survey of India, along with the technicians and assistants at the Dehradun printing department had colonial origins. British geographical methods had been absorbed in Indian universities since the 1920s when geography was instituted as an academic discipline, and especially with the founding of geographical societies: the Indian Geographical Society at Madras (1926), the Geographical Society of India at Calcutta (1932), the Bombay Geographical Association (1935), and the National Geographical Society of India, Varanasi, 1946[8] (Fig. 4 *Geography departments, associations and journals in colonial India*). This favoured a descriptive ideographic style of the gazetteer kind reinforced through newly founded journals such as *The Indian Geographical Journal* (Madras, 1941–), the *Geographical Review of India* (Calcutta, 1951–), the *Geographer* (Aligarh) and the *Bulletins of National Geographical Society of India* (Benares 1948–1954), followed from 1955 by the *National Geographical Journal of India* (Chatterjee 1968).

[7]The result of his survey was published later in 1958, *Land of Britain: its use and misuse* (London, Longmans, Green and Co).

[8]Among those counted as key figures in diffusing the British geographical orientations in India were M. Shafi, R. L. Singh, C. D. Deshpande, P. Dayal, and George Kurian in Madras.

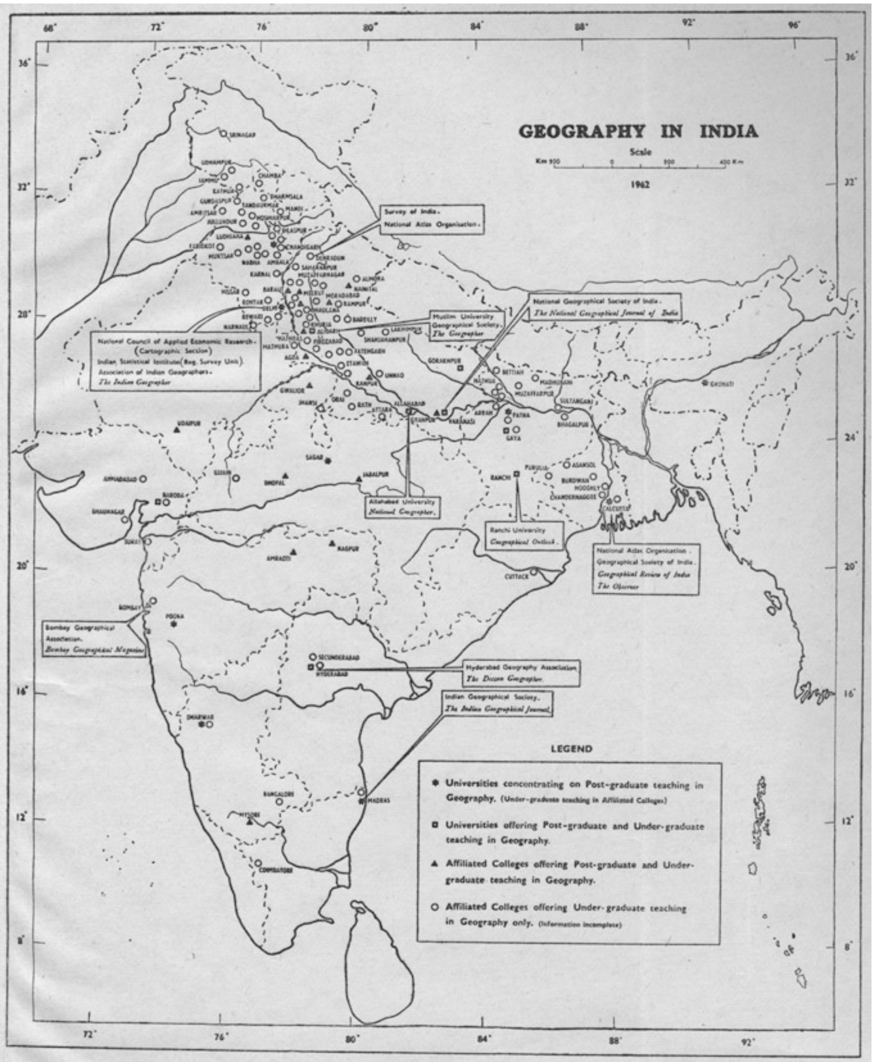

Fig. 1—Map showing locations of most of the Universities and Colleges having geography departments, and Geographical Associations with the names of geographical journals published by them.

Fig. 4 University geography departments, associations and geographical journals in colonial India

Though working in Calcutta University, in a department of British inspiration, Chatterjee was not exclusively tied to British geographical and cartographical methods. In the 1930s he trained in France under the French geographer Emmanuel de Martonne. The latter's initial work had focused on Wallachia, a province of Romania. His book published in 1902 contained a large cartographic apparatus

(De Martonne 1902). This study convinced him that geographical factors along with economic solidarities were of crucial importance in deciding national frontiers and had to considered in attributing territories to different national groups. Politicians were apt to forget the realities of physical reliefs or the big lines of human geography and must be reminded of this. De Martonne was rapidly recognized as an expert on these questions. In 1917, he was invited by the French president Raymond Poincaré to participate in a committee set up to reflect on questions of European frontiers after the war along with the historian Ernest Lavisse and Paul Vidal de la Blache, the founder of the French geographical school (Davion ed. 2015). After World War I, De Martonne worked for the Peace Conference in the territorial commission for Yugoslavia and Romanian affairs where he further contributed to reflection on boundary issues in the sensitive areas of Romania and the Balkans (Crampton 2006). In the 1920s the French committee of cartography renewed discussions to produce a national atlas of France, which would finally be printed in 1946.[9] De Martonne was one of its principal actors (De Martonne 1933). While a student at the Sorbonne in Paris in the 1930s under the supervision of de Martonne, Chatterjee could not have been unaware of this operation, which, moreover involved most of the French geographers. Chatterjee's silence about his ties and intellectual debts to the French school of geography and cartography in 1957–1960 is difficult to understand. In 1957, he was already an important, recognized geographer, participating regularly in international geographical conferences and associations. All the same, it is worthwhile to examine Chatterjee's initial training and its impact on the scientific conception of the first national atlas of India.

What brought S. P. Chatterjee to France to do his Ph.D. thesis with Emmanuel de Martonne in 1932? The French presence and intellectual influence though politically limited to the French territories in the south and east of India had nevertheless made some inroads into British India. A Franco-Indian Committee founded in Paris in June 1914 aimed at developing intellectual, scientific, economic relations between France and India and help send Indian students to France. An overall increase in French language teaching in India was noted between the two World Wars despite the nationalist shift towards an indianization of education under Gandhi's influence. Indian elites, already mastering English, looked to other modern European languages as a means of dealing independently with the West, and a tool of emancipation from an imperial framework. Although they habitually turned to the bastions of learning in Britain for higher education or preparation for the civil service administrative exams, French ideas and language exercised a considerable attraction, particularly in cities like Bombay and Calcutta. A steadily increasing presence of Indian students was noted in France from the late 1920s, in

[9]A first six-page long typed table of contents dated July 1922 is to be found in Bibliothèque nationale de France, Archives de la Société de Géographie, AR-AZ (45); Comité national de géographie (1946), *Atlas de France*, (Paris, Editions géographiques de France), 84 plates; 2nd ed. 1951–1958, (CNRS, Editions géographique de France).

Paris, but also in provincial universities like Bordeaux, Lyons or Nancy, to pursue higher studies or acquire technical training. The nationalist poet Rabindranath Tagore introduced French teaching at his international university in Santiniketan founded in 1918. He invited the French Indologist Sylvain Lévi in 1921 for a year-long visit, and his conferences at Dacca University attracted some Calcutta students to French universities. The historian Kalidas Nag doing his thesis from the Sorbonne noted in a letter that three of his friends from Calcutta University would be visiting him: S. K. Chatterji, S. K. Mitra and P. N. Ghosh (Nag 1923). In 1928, as professor at Calcutta University, he further mentioned that many of his students could read French books (Berthet 2006). Chatterjee was not the only student who proceeded to France: there were other geographers like R. N. Dubey whose thesis focused on the Doab (Dubey 1935). M. H. Al-Rahman on the planes of Awadh (Al-Rahman 1940). They would give Indian geography a methodological orientation privileging man-land relationships. S. P. Chatterjee having studied geology at Benares Hindu University might have been aware of de Martonne's works and found it logical to study under one who considered geology as much as topography an indispensable part of geography.

Under de Martonne, Chatterjee finished his thesis on the plateau of Meghalaya (Chatterjee 1936). The French geographer's attention to the human dimension in geography, ethnography and toponomy is already apparent in Chatterjee's thesis. His very fine drawings made from photographs (was this a cheaper method for students printing their thesis?) showed his awareness of the importance of fine lithographic technique, the sensitive approach to describing the natural topography and the effects of human presence and interventions. This would influence Chatterjee's subsequent *Bengal in Maps* in 1947, an atlas that was not, in his words, the usual collection of locational maps of the conventional type but based on field and library work. His intention was to reveal the regional unities that had slowly been formed through exchange systems, networks of communication as well as land uses. Undertaken just before the partition of Bengal, this atlas reflected de Martonne's approach privileging population distribution, roads, railway infrastructures, crop patterns, land distribution, religious groupings etc. He presented data not as facts for themselves but as part of a whole, as stakes in the chain of causes and effects that shape the life of a region. Thus, no fact was studied as a physical, economic or political phenomenon but as part of a series of forms of physical, economic or political life (Palsky 2002; Bowd 2012). This contrasted with the British imperial tradition oriented towards the production of local and region administrative gazettes. The Survey of India had sustained this manner of describing a region through lists of data, arranged by categories with the aim of localizing regional specificities and establishing a descriptive inventory of regional realities. They focused on what is where without looking for explanations connecting physical features and human activities.

Chatterjee's maps of Bengal were displayed in an exhibition at Calcutta in January 1947, but they do not seem to have reached and influenced the Boundary Commission committees drawing the lines partitioning Bengal in July–August 1947. Yet, Chatterjee was closely connected both to the political and the academic world. In his preface, he thanked his administrative superiors, from the vice chancellor Shyama Prasad Mookherjee, to the head of the geography department of Calcutta University, his colleagues as well as the British geographer Dudley Stamp, already cited above, who furthermore had inaugurated the exhibition (Chatterjee 1949). Mookherjee was both barrister and politician who served as Minister for Industry and Supply in Nehru's cabinet.

Even if it has not been deeply analysed (Singh 2009) the impact of Emmanuel de Martonne on Chatterjee's work can be traced in some aspects of his geographical methods such as his emphasis on fieldwork and observation. Chatterjee believed that for anyone who hoped to write scholarly works in geography, direct observation in the field was essential, for only there could the scholar observe the patterns and associations out of which geographical problems emerged. This was close to de Martonne's methodology of deciding frontiers on regional identities, economic solidarities and strategic interests. Observation allowed the geographer to understand what made for the unity of a territory instead of focusing on the frontier that separated it from other regional entities. In any case, De Martonne's intellectual heritage remains to some extent a hypothetical matter. It is all the more difficult to measure as after his Parisian training Chatterjee moved on to Great Britain. Indian geographers were beginning to work in a larger international context that would be expanded even further after 1947 with trainings in the Commonwealth countries as well as in the USA and USSR. The Regional Survey Unit responsible for data collection was opening its doors to foreign geographers and economists, specialists in regional planning. During the time the atlas was being produced, the University of Aligarh hosted the first Indian International Geography seminar in 1956, attended by 66 delegates from across the world, but particularly from the Soviet bloc and Islamic countries (Rathjens 1956).

When Chatterjee launched the operation of the atlas, he benefitted from more than two decades of professional experience in geographical and cartographical research. He was by no means simply reproducing ready-made models or procedures but had developed the capacity of developing new tools for scientific research. In his detailed review of the atlas published in 1959 Dudley Stamp insisted on the innovative questions and techniques developed by Chatterjee: "this atlas deserves to be studied not only for its intrinsic interest but as an example of methods and technique in cartographical representation of data" (Stamp 1959: 96–97).

Simultaneously, since 1952 Chatterjee had begun to participate in International Geographical Congresses: at Washington in 1952 he presided over the section on Urban and Rural Settlements, going on to become Vice President (1960–64) and then President (1964–68) of the *International Geographical Union*. He was actively engaged in the commission of national atlases created during the International Congress at Rio de Janeiro in 1956, where delegates discussed the importance and value of this scientific tool as a basic document for planning and a rational valorisation of national territories. The Commission pleaded for the necessity and urgency of international technical coordination for producing national atlases (Tulippe 1959).[10] In this international climate questions about the hallmarks of a national atlas, or its aims were debated. The state of work, difficulties and challenges were presented and shared. Such questions were highly relevant for the Indian atlas team, which benefitted from debates on what was to be or could be mapped, and which scientific techniques were best suited. The International commission, enlarged to include another four corresponding members coming from France, Canada and Belgium (Salichtchev ed. 1960)[11] expressed special concern about uniformizing standards of representation, converging methodologies, setting international norms for atlases on format, dimensions, colours, signs, titles or projection. This would permit comparison, but even more, allow an exchange of techniques, ideas and methodologies about the best ways to apply geography for national development. The International Geography Seminar of Aligarh (1956) devoted a special panel to the place of geography in national reconstruction (Chatterjee 1963: 36–37). Indian reactivity to these questions corresponded to the perspective of the U.S. National Committee, as Chatterjee pointed out in his presidential address to the International Geographical Congress held at Delhi in 1968. As he put it, the Indian national atlas proposed notable innovations. “For the first time, several thematic maps deal with various aspects of physical and socio-economic phenomena. Through these maps there is an immense possibility of making substantial contributions by geographers towards planning for resource development in India.” (Chatterjee 1968: ii).

Its primary use as an administrative and political tool destined it to the different government departments and administrations. There was also a distribution abroad, for example, by the Denoyer-Geppert Company, Chicago, for the United States. It was sold for Rs. 125 (a popular edition cost only Rs. 100) and it was also sold as individual plates for Rs. 5 a map. Altogether, it had a large diffusion, as testified by its presence in many university libraries across the world. Significantly, the Indian government issued a stamp with the map of India in 1957, the year the atlas became available. International geographical circles acknowledged the work, if not immediately. The 1957 issue of the *Geographical Review* in an article surveying the publication of national atlases from Europe to Africa noted that Asia and Africa were “sadly deficient in national atlases” (Yonge 1957). But its 1959 number hailed the Indian atlas as a ‘significant achievement’. It attributed the excellence of the production to the high standards of cartography and the long experience of the Survey of India (Brush 1959: 147–149). The journal *Geography* along with other

[10]The four other members of this commission included C. P. Barnes president of the Commission on a national atlas of the United States, C. Leszczycki, Director of the Institut Géographique de l’Académie polonaise des Sciences; K. A. Salichtchev, Director of the Section of Cartography of the Faculty of Geography of the University of Moscow and E. C. Willats, Senior Research officer at the Ministry of Housing, England.

[11]The Commission held its first plenary meeting at Moscow and Leningrad from 11 to 20 Aug. 1958. Also participating were geographers and cartographers from Sweden, Yougoslavia, Bulgaria, East Germany, North Korea, Mongolia, Hungary, Moscow.

geographical publications on South Asia featured a small notice on it, acknowledging its conception, content and execution (Pradyumna 1966).[12] Dudley Stamp gave the most complete review in 1959, welcoming the work as an outstanding atlas, blending national aspirations with international usefulness. Chatterjee himself presented a paper on the National Atlas at the plenary meeting of the Commission of national atlases at Moscow and Leningrad in August 1958 and later at the International Geographical Union at Delhi in 1968. The Atlas was serving to send a strong signal of India's new status to its neighbours and to the world. It was a critical element in a common international scientific community language and discourse, and strengthened India's position as host of international conferences in a field recognized to be of vital importance for developing countries. Reactions from the Western states, and the community of international scholars recognized this.

Indian national politics had clearly coloured the selection of what maps would portray. It became one of the first of a series of Indian thematic and state statistical atlases. Faithful to the intention of producing an atlas in English, the National Atlas Organisation continued its work. In 1969, Chatterjee published an atlas of the Damodar valley region straddling Bihar (today Jharkhand) and West Bengal (Chatterjee 1969), in response to the call for regional planning. The trend was again in alignment with international changes. The Commission of the International Geographical Union had mutated to become a Commission of National and Regional Atlases. As the Damodar Valley Commission was charged with changing a region whose high rainfall was both an advantage for agricultural production and a liability because of floods and soil erosion, the atlas' maps represented annual and seasonal rainfall in the region, along with river flow, surface run off or frequency of floods. By 1960, health, agricultural, economic, resource and statistical atlases were produced.

In 1978, the National Atlas Organisation was renamed the 'National Atlas and Thematic Mapping Organisation' responsible for thematic cartography and geographical research at a national level. As a subordinate office under the Department of Science and Technology, it was designated to represent national data in the form of maps and atlases to accurately communicate the country's development and planning initiatives to users and citizens. The English version, produced in 1986, contained 300 plates in eight volumes that permitted a more detailed treatment of questions on a larger scale (Fig. 5 *National atlas in English*) and the inclusion of a big historical section. One novelty not to be neglected: each map could be sold as a loose sheet and consequently reach a wider all-India public. They continue to be sold till today in this form by the National Atlas and Thematic Mapping Organisation.[13]

[12] *Geography*, vol. 45, 1960, p. 140.

[13] The price list of NATMO Publications (National Atlas and Thematic Mapping Organisation) gives the details: http://www.natmo.gov.in/auth/natmo_manage/writereaddata/files/prise%20list%20NEW.pdf.

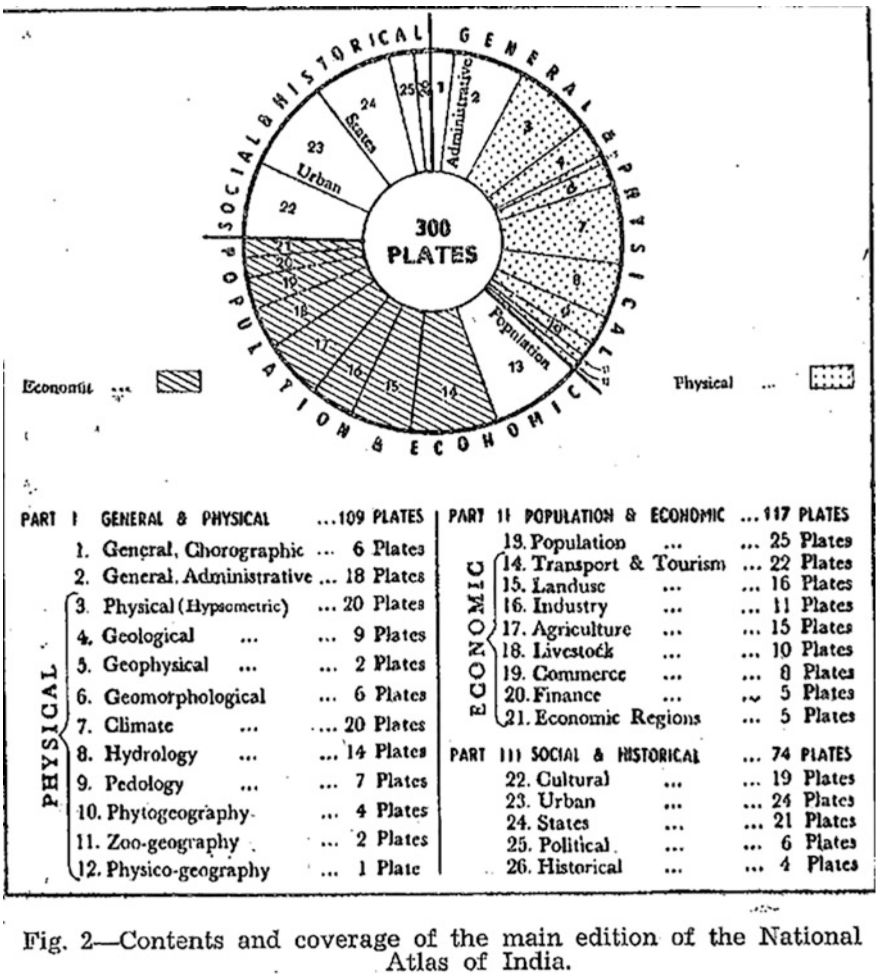

Fig. 5 Contents of the National Atlas in English, 1986

5 Conclusion

The first national atlas fulfilled the criteria internationally identified as characteristic of national atlases: to be as comprehensive as possible in content, include maps of high scientific value, serve utilitarian ends and be accessible to all educated readers (Salichtchev 1960). Even if its large format made it a more of a reference work for government institutions, departments and schools rather than for private use, it offered a national overview at a time when the focus was mainly on regional economic geography. Its rapid production in a space of four years gave it a high economic value as it made the maps available just before the development for which they were needed got under way. Furthermore, it exhibited the efficient functioning of some newly founded government departments and scientific organisations such as the Regional Survey Unit, the Association of Indian Geographers, which organized an all-India seminar on 'Mapping India' at Pilani in March 1957 or the Indian Council of Geographers set up in 1947.

A rich tradition of reflection and analysis of maps and atlases has underlined their importance as vehicles for teaching citizens the spatial reach of their nationality. Cartographic representations are seen as strengthening the sense of both local and national identity or as projecting the specificities of their nation by selecting particular sets of features and elements. From the state's perspective, the atlas certainly achieved these objectives. It carried highly compressed territorial information as political messages destined to a very mixed group of readers and users. Thus, as an element of national identity, the atlas could be seen to have accomplished what Benedict Anderson termed the "logoization of political space", now a catchword in cartographical literature. But it is difficult to say how, and to what extent, it shaped citizens or altered their understanding of the nation. More research into its distribution, reception and usage would be necessary to advance any thesis on these aspects.

It also seems evident that the atlas' usefulness and impact was diminished by the fact that the legends and information were entirely in Hindi; the absence of a detailed administrative overlay in English restricted its readership. Furthermore, the Hindi used was quite unfamiliar even to Hindi speaking Indians. The colonial government's decision to adopt English as the language for superior education had disadvantaged the development of Hindi, especially for a scientific and technical vocabulary. Hence, the terms necessary for a geographical description of India were not ordinarily used even by learned elites. In this sense, it was educating Indians about the new power relations of culture through the cartographic exercise of "reclaiming, renaming and re-inhabiting the land" (Said 1993: 226).

If the effects of this first atlas were somewhat mitigated within the nation, from an international perspective it fitted into the government's long-term vision of asserting the country as a full time key player in the world. The atlas thus answered a dual purpose. Though extremely nationalist in its aspiration, conceived as a tool to promote development in the frame of Nehruvian policies, it nevertheless conformed to international scientific standards. Elaborated on the morrow of independence, it was based on multiple experiences and procedures. On the one hand, it drew upon a colonial heritage of institutions, and a corps of academics and geographers trained in British institutions. On the other hand, other scientific currents, both French and international, had clearly contributed to the elaboration and execution of the project. International conferences facilitated a sharing of experiences or familiarity with prevailing geographical codes and norms, which would be even more visible in the second edition, published in English in 1986. The first national atlas of India thus appears as a somewhat paradoxical production. It was the fruit of a national political experience, centred on state directed and controlled economic development within a protectionist frame. At the same time, it was the result of accelerated academic and scientific exchanges and collaborations, which, in the field of geography, resulted in a common elaboration of forms of normalization and standards, particularly evident in cartographical productions.

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