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**Reformatting a Traditional Image of the Qing Imperial Realm
According to Modern Western Cartography:
Map of the “Great Qing Everlastingly Unified 大清年萬年一統”
by Li Mingche 李明徹 (1751-1832) Discovered in Göttingen***

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Abstract

Göttingen State and University Library in Germany (*Staats- und Universitätsbibliothek Göttingen* – SUB) possesses a single surviving copy of a general map of the Qing Empire, which until early 2014 was considered to be lost (shelfmark: **Cod. Ms. Mapp. 34**, see **Map 1**).¹ The map is a middle-format hand-coloured block-print. All the place-names and other textual elements in the map are given exclusively in Chinese. The map is authored by a known Chinese scholar, Li Mingche 李明徹 (1751-1832), but is undated. Yet, the time of its creation can be reliably approximated to the mid 1820s, most likely 1825-1826, by comparison with other cartographical works of the map's author, as well as other information available about the map.² The map exhibits a clear stamp of the Western mapmaking, primarily that of French cartography of the 18th century, yet its fine fusion with the system of traditional Chinese cartographic conventions and aesthetic preferences makes it an interesting hybrid cartographic specimen.³ This article proposes an initial analysis of the map providing a basis for future more detailed study. In particular, I advance the hypothesis that the map is an

* This study was undertaken within the framework of the research project “TRANSLATION TERROIRS – East Asia Between Autochthonous and Western Cartographic Languages” (2019-2022, N° DFG-SCHA_936-5-1), based at the Max-Planck-Institute for the History of Science, Berlin (2019-2022).

<https://www.mpiwg-berlin.mpg.de/research/projects/translation-terroirs-east-asia-between-autochthonous-and-european-cartographic>. The project is part of the Cluster TRANSLATION CULTURES OF EARLY MODERN TIMES (1450-1800) <https://www.spp2130.de/index.php/en/overview/>.

¹ Full credit for paving the way to the re-discovery of the map should be given to the librarians of the Göttingen State and University Library (*Staats- und Universitätsbibliothek [SUB] Göttingen*), and in particular to Dr. Helmut Rohlfing, till November 2014 Director of the Department of Special Collections and Conservation (*Spezielsammlungen und Bestandserhaltung*), and Bärbel Mund, member of the department staff and Head of Manuscripts and Rare Prints (*Handschriften und Seltene Drucke*) group. They called my attention to the map in October 2013 and were most helpful in facilitating its initial investigation and digitisation. I am truly grateful also to Catherine Delano-Smith for detailed critical remarks on the first draft of this article, and to Katherine Parker for important remarks on the final draft, as well as to many colleagues for their help with particular items in relation to this map, whom I thank below accordingly. My special thanks to John Moffett for the English proof-reading of this article. Any mistakes found in this paper are my own responsibility.

² Since September 2020, a digital copy of the map has been accessible through the site of the Göttingen State and University Library, as well as the German database of archival manuscript documents, the Kalliope-Verbund: <http://resolver.sub.uni-goettingen.de/purl?DE-611-HS-3226686>, <https://images.sub.uni-goettingen.de/iiif/image/gdz:DE-611-HS-3226686:00000001/full/full/0/default.jpg>, <https://kalliope-verbund.info/de/search.html?q=%22m6%22&lastparam=true>. Regretfully, the map has not yet been entered into the IKAR database of old maps in German libraries.

³ Under a “hybrid map” here I understand a map, which combines conventions borrowed from at least two cartographical traditions.

underappreciated attempt to reformat a traditional image of the Qing imperial realm, that of the “Great Qing Everlastingly Unified 大清年萬年一統” known from the famous Blue Maps, which were current in China in the first quarter of the 19th century.⁴

Keywords

Traditional Chinese cartography, modern Western Cartography, hybrid maps, Li Mingche

Material characteristics

Let us start an examination of the map with its material properties, an aspect that tends to be overlooked in this age of digitisation. The map is printed on a single sheet of paper framed by bands of pale blue cloth, most likely silk. The size of the map sheet including the cloth frame is about 96 x 174 cm.⁵ Originally the map was fixed on a wooden stick to facilitate unrolling, the hole-marks where the stick was fixed being visible on the left side of the map, with the majority of damage being found at the right side, which was the most exposed when the map was rolled up. The width of the cloth frame varies between 4.5 and 5 cm on the sides and ca. 1.7 cm at the top and the bottom. The paper map sheet measures ca. 92.5 x 164.5 cm, which was originally discreetly mounted on three sheets of paper, carefully pasted together on the verso. It was remounted during restoration of the map at the SUB in 2009 using a single dense sheet of paper in order to stabilise it. Two small pieces of cloth resembling Chinese buttonholes fixed on the recto of the map, but showing their tips on the verso at the top and the bottom, roughly mark the central vertical axis of the map. Although material analysis of the map – quality and origins of its paper and colorants, as well as comparisons with similar mountings – are still to be carried out done, one can already conclude that the use of a single sheet of paper and fine colours, the symbolism of which will be discussed below, make it a rather expensive and refined *literati*-oriented cartographic product. Another relatively expensive attribute of the map is that it is printed from a single wood-block.

This article is mainly concerned with insights into the map's content and cartometric characteristics, or, in material terms, into the part of the map sheet without blank margins and the graphic frame, or the map body.⁶ This cartographically functional part occupies an area of ca. 86 x 148 cm.

Encompassed areas

The map displays a general view of the expansion process of the imperial realm under the Qing dynasty to Manchuria, Mongolia, Xinjiang and Tibet (see **Map 1a**). The northern territories are delimited by a distinct borderline with the Russian Empire highlighted in yellow; the south is also delimited by a clear borderline, while the borders in the west are not

⁴ The Blue Maps are focused in the new book by Pegg and Papelitzky (forthcoming 2024).

⁵ Approximate size is given because the map edges are not always even.

⁶ The margins on the paper sheet differ in width and are again not always even: the left margin varies from 8.3 to 8.8 cm from top to bottom; the right margin from 7.5 to 7.9 cm from bottom to top; the top margin from 5 to 5.5 cm from right to left. The bottom margin has an even width of 1.5 cm, allowing the conclusion that the map was drawn from its bottom line. It is a matter of regret that catalogue entries for cartographic items, including the map in question, tend to indicate the size of the entire map sheet only, and rarely distinguish the size of the map body.

yet demarcated, thus being open for further expansion. There are no administrative divisions of the new peripheral territories on the map. These are only applied to the core territories of the imperial realm around the basins of the Yellow and the Yangzi rivers – the “eighteen provinces of the Inner-Lands” (*neidi shiba sheng* 內地十八省), which can be referred to as “China Proper”. These are divided by neat borderlines tinted in different colours, with the exception of the borders of the northern and north-western provinces, which are left open.⁷

The eighteen provinces constitute a compact cluster of units densely filled out by place-names and are contrasted visually with the sparse new territories. An interesting imperfection can be detected in the delineation of the borders of Shanxi and Shaanxi provinces. These provinces are divided by the Yellow River, but the province border-mark between them is missing, so that visually they look like a single administrative division, especially since their borders have the same colour. This colouring error raises an interesting question concerning the phases of the map's production and the limits of the author's role, in particular, indicating that the “painter” who coloured the map was apparently not a cartographer.

Only territories that constitute the Qing Empire are filled out with place-names and landmarks, the adjoining lands being left blank. The only exception is Korea, which occupies an intermediate position in this respect – it contains few landmarks, mostly rivers, and just a couple of place-names, thus showing a potential interest of the Qing Empire in the Korean territories. The same political principle applies to the adjoining maritime space - the sea is blank with the exception of islands adjacent to the coast *and* belonging to the imperial realm, the largest among them are Hainan, Taiwan and Sakhalin. Neither Japan nor Ryûkyû are marked on the map.

Cartographical works by Li Mingche and an approximation of the map's date

One of the main attractions of the map for Chinese historians of cartography and the Chinese scholarly community in general is that it is signed by a known Chinese scholar, Li Mingche (1751-1832), who was born in the 16th year of Qianlong 乾隆 (r. 18.10.1735—8.02.1796) and passed away in the 12th year of Daoguang 道光 (r. 3.10.1820—26.02.1850).⁸ He was a passionate advocate of modern Western science, and, at the same time, a Daoist master. Links between science and Daoism in China has received considerable attention, but for earlier periods of Chinese history.⁹ The case of Li Mingche provides evidence of the continuation of a certain relationship between science and Daoism in China up to the late imperial period.

⁷ The division of the core imperial territories into the eighteen provinces under the Qing dynasty originates from the fifteen provinces, more precisely two capital districts and thirteen provinces, of the Ming Empire. During the Qing some of the Ming provinces were sub-divided, so that their total number became eighteen.

⁸ I give here generally accepted dates for Li Mingche – 1751-1732, but to be absolutely precise, one should verify the months of his birth and death. Without this information, his life-span should be given as 1750/51 – 1831/32. The generally accepted dates of his life are derived from the simple addition of 16 to 1735 and 12 to 1820. However, the 16th year of Qianlong and the 12th year of Daoguang can include a period in 1750 and 1831 as well, respectively, due to the difference between the beginning of the Christian (Gregorian) and the Chinese calendar years.

⁹ For a critical survey of studies discussing relationships between science and Daoism in China, in particular studies by Joseph Needham and Nathan Sivin, see an introduction by Alexei Volkov to a special issue of the *Taiwanese Journal for Philosophy and History of Science* devoted to a Daoist master and polymath of the late 13th - early 14th century, Zhao Youqin 趙友欽, see Volkov (1996).

The name Li Mingche is found at the end of the general introduction on the map, a square-shaped textual passage placed at its lower right corner, the longest of the three textual passages incorporated into the map. The signature constitutes the last six characters of the introduction, which are placed separately:

青
來
李
明
徹
繪

Qinglai Li Mingche hui

“Drafted by Li Mingche, [bearing style name 號 – hao] Qinglai”

No precise date of the map's creation is given in the map but is naturally limited by the roughly fifty years of professional activity of its author – from the last two decades of the 18th century through the first three decades of the 19th century. This rather broad approximation of the map's date may, however, be narrowed down through comparison with other cartographic works by Li Mingche and those by his close contemporaries.

Li spent all his life in his native Guangdong 廣東 province, having been born in Panyu 番禺 city to the south of its capital Guangzhou (Canton) 廣州, now one of its districts, and he passed away in Guangzhou. This was a location relatively open to foreign knowledge, and he was primarily concerned with transmitting the achievements of Western astronomy. It was through astronomy that he became interested in Western cartography.¹⁰ It is apparent from his main work *Yuantian tushuo* 圓天圖說 (The Round Heavens Illustrated and Explained, 1819-1820).¹¹ The main text is preceded by a preface by one of the most outstanding Qing dynasty scholars Ruan Yuan 阮元 (1764-1849), who in 1817-1826 served as the provincial governor of Guangdong, prefaces by two other late Qing scholars, Lu Yuanwei 盧元偉 (1762- ?) and Liu Binhua 劉彬華 (1770-1828), as well as a self-preface (*zixu* 自序) by Li Mingche.¹²

¹⁰ I am indebted to Lin Tieng-jen 林天人 and Wang Qianjin 汪前进 for calling my attention to the authorship of the map. For a general essay on Li Mingche, see Zhen Peng 甄鵬 2007. For his input into the diffusion of astronomical knowledge, see Joseph Needham and Wang Ling (1959), 457, Chu Pingyi (2018), 351. For an overview of his cartographical works, see Zhen Peng (2006).

¹¹ See *Yuantian tushuo* (1819-1820).

¹² The date when the main text was cut is given on the front page of the *Yuantian tushuo* as follows: *Jiading jimao nian juan* 嘉慶己卯鐫 – “cut in the 24th [jimao] year of Jiaqing Emperor” (26.01.1819 – 13.02.1820). The prefaces by Ruan Yuan, Liu Binhua and Li Mingche are dated more precisely (the preface by Lu Yuanwei is undated). The preface by Ruan Yuan is dated to the *chushu* solar term (August 23rd – September 7th) of the 24th [jimao] year of Jiaqing (己卯處暑 *Jimao chushu*), and, therefore, refers to 1819. The preface by Li Mingche is dated to the 12th month of the 24th [jimao] year of Jiaqing (嘉慶己卯歲嘉平月 *Jiaqing jimao sui jiaping yue*), which corresponds to early 1820 (the 12th month began on January 16th, 1820). The preface by Liu Binhua is dated to the 3rd day of the 3rd month of the 25th [gengchen] year of Jiaqing (嘉慶歲在庚辰三月三日 *Jiaqing sui zai gengchen sanyue sanri*), and, is, therefore, the latest among the dated prefaces and corresponds to 1820. One can conclude that the main text was cut in 1819 shortly before the earliest preface (by Ruan Yuan), and printed in 1820 after the latest preface (by Liu Binhua). The three initial volumes [*zhengbian* 正編] of the *Yuantian tushuo* are supplemented by two follow-up volumes [*xubian* 續編]), cut in the 1st year of the Daoguang Emperor (03.02.1821-22.01.1822).

The third volume of the *Yuantian tushuo* includes a geographical section with a series of maps.¹³ It begins with a rather ordinary, for East Asian cartography of the time, map of the world relying on the modern Western cartographic framework. It is drawn according to a globular projection with a 10° graticule and with a prominent ecliptic line. The map consists of two separate hemispheres, each printed on two pages. The delineation of continents and islands in the map is quite approximate. It seems to be copied from an earlier world map drawn by Zhuang Tingfu 庄廷敷 (1728-1800).¹⁴ This world map from the *Yuantian tushuo* was translated and extensively commented on by Heinrich Julius Klaproth (1783-1835), a prolific orientalist of broad interests, including cartography.¹⁵

After the world map Li Mingche places a general map of the empire followed by maps of the eighteen provinces of “China Proper”. As with the world map in the *Yuantian tushuo*, the eighteen provincial maps do not contain anything especially innovative. They follow the familiar templates of the first block-printed edition of the Kangxi atlas (1717), the first of the so-called Qing “court atlases”. These atlases were the products of a state project of systematic and comprehensive mapping of the imperial territories, subsequently enlarged to include the territories of close neighbours. It began during the era of the Kangxi 康熙 emperor (r. 05.02.1661 – 20.12.1722) and was continued during the reigns of his two successors – Yongzheng 雍正 (r. 27.12.1722 – 08.10.1735) and Qianlong.¹⁶ The Kangxi atlas, which established a long-lasting model for this cartographic genre, is known in the form of the initial block-printed, as well as copper-plate editions, both dating to the same year (1717), and, following the survey of Tibet, the revised copper-plate (1719) and block-printed (1721) editions.¹⁷ This cartographic enterprise was the result of interaction between the autochthonous Chinese tradition of cartographic surveying applying a quantitative square grid¹⁸ and modern Western cartography, which relied on more advanced techniques of cartographic surveying and applied a cartographic projection. Various attempts to combine two different cartometric systems – the quantitative square grid and the latitude–longitude graticule – can be traced through the atlases, but this interesting subject is still to be investigated in detail. Thus, the provincial maps of the *Yuantian tushuo* are drawn according to the latitude–longitude graticule, but with an attempt to make the graticule visually similar with the square grid.¹⁹ Klaproth also worked on translations of the provincial maps from the

¹³ A copy of this volume can be downloaded from <https://gallica.bnf.fr/ark:/12148/btv1b90062337>.

¹⁴ An image of a map by Zhuang Tingfu kept at the BnF is available through the following link: <https://catalogue.bnf.fr/ark:/12148/cb40751952p>. I am grateful to Wang Yao 王耀 for this reference.

¹⁵ Klaproth (1833).

¹⁶ For the seminal study of the Qing “court atlases”, see Cams (2017). For a useful summary of surveying practices during the Kangxi period, see Han Qi (2006). Qing cartography at large is discussed by Hostetler (2001, 2009).

¹⁷ The development of the Kangxi editions and the genealogy of the printed Qing “court atlases” are discussed in chapter 3 of Cams (2017), 177-253, and are conveniently summarized in Cams (2018), esp. 256 with Table 2, and 263 with Figure 4, reproduced from Cams (2017), 201 with Figure 35. The dates of the Qianlong atlases need to be revised.

¹⁸ “Quantitative square grid” is a slightly modified more universal definition of “quantitative rectangular grid” applied by Joseph Needham and Wang Ling (1959), 498. The quantitative square grid is cardinally different from the latitude–longitudes graticule, in particular, the square grid does not take into consideration the curvature of the earth.

¹⁹ The latitude and longitude degrees with respect to the prime meridian at Beijing are given at the margins of the provincial maps; the maps use a 0.5° graticule.

Yuantian tushuo. These translations were never published, but can be found among his manuscripts in the British Library.²⁰

The general map of the Chinese imperial realm placed between the world map and the provincial maps is, however, absolutely outside of this cartographic lineage (see **Map 2**). In contrast to the world and the provincial maps that pointedly follow the Western cartographic framework through applying a latitude–longitude graticule, the general map of China is just a rough schematic sketch. It is no wonder that this map never tempted Klaproth to translate it for a Western audience. The map's title – “Complete Map of the Great Qing Unified” (*Da Qing yitong quantu* 大清一統全圖) – has a clear affinity with that of the map in question through referring to the territory of the Qing Empire as the “Great Qing” (Da Qing 大清) and “Unified” (yitong 一統). However, it depicts only the core territories of the imperial realm and its north-eastern territories (Manchuria, the ancestral lands of the Qing emperors), while the western peripheries (Xinjiang and Tibet) are out of the picture (see **Map 2a**). The map shows a very rough outline of the main river network – I have marked some of these rivers here (Yellow River, Yangzi and Amur), as well as a pronounced depiction of the Great Wall with the desert zone to the north – the areas of desert marked by dotted areas. It also has borderlines between the provinces, though without providing their names, only their capitals and some main cities, for instance, Guangzhou (Canton) and Xiamen 廈門 (Amoy) at the southern coast of China. The map has some completely outdated topographical features, such as, for instance, the course of the Yellow River depicted in confluence with the Huai River, typical of maps of the Ming dynasty (1368-1644). There are also some interesting distortions, in particular in depictions of the islands. Thus, Japan is reduced to one small far-away island (as it is found in some Ming dynasty maps), while Taiwan, Big and Small Ryūkyū, and Tsushima Island are oversized. This rather unusual distortion seems to convey a view from the perspective of the south-eastern coast – the islands closest to it are oversized and those that are the most far-away (Japan) are shrunken. This map is a curious example of the Chinese tradition of diagrammatic or relational maps aimed to roughly approximate relative locations of landmarks without much concern for accuracy. At the same time, the map bears a mild stamp of modern cartography in the form of a mark at the top of the map of the prime meridian to be delineated through Beijing, as well as those of the E 30° and the N 40° at the north-eastern corner of the map (Manchuria), though the longitude-latitude lines themselves are not delineated.

Now, if we juxtapose the rough sketch map of the imperial realm with the map by the same author discovered in Göttingen, we can see that “something” happened in-between in terms of cartographic quality, even taking into consideration that the maps have very different formats, and that drawing the map discovered in Göttingen on a page of a book is technically impossible. What could cause such a considerable break-through in Li Mingche's cartographic achievements? Li was also engaged in Ruan Yuan's project of compiling a new, considerably up-dated edition of a provincial gazetteer – the *Guangdong tongzhi* 廣東通志. The project started in 1818 and was completed in 1822. The gazetteer was co-edited by one of the most influential geographers and cartographers of the time, a younger contemporary of

²⁰ For a description of the Klaproth Manuscripts kept at the British Library, see Dorofeeva-Lichtmann (2021). Translations based on the eighteen provincial maps from the *Yuantian tushuo* constitute File 1.

Li's, Li Zhaoluo 李兆洛 (1769-1841), who in 1820 arrived in Guangdong and must have had an influence on Li's cartographical competence.²¹

The year of Li Mingche's death – 1832 – Li Zhaoluo published the 1st edition of his own map of the Chinese Empire – *Huangchao yitong yudi quantu* 皇朝一統輿地全圖 (“Complete comprehensive terrestrial map of the Imperial Dynasty Unified”, 1st ed. 1832), created together with Dong Fangli (Youcheng) 董方立 (祐誠) (1791-1823).²² One gets the impression that he could not publish his map earlier out of respect for his elder fellow-cartographer. Li Zhaoluo's map is larger – it is block-printed on eight scrolls, the map area measuring ca. 243 x 338 cm (8 scrolls 259 x 43 cm each), and much more elaborate, but has clear affinities with the map by Li Mingche, for instance, in the depiction of the Amur-Sakhalin area and south-eastern Tibet. Yet, Li Zhaoluo's map shows a much more complete administrative division of the Qing Empire. If in Li Mingche's map the division into provinces applies only to “China Proper”, in Li Zhaoluo's it already covers the entire imperial realm. There is, however, a principal and interesting difference between the two maps: Li Mingche sticks exclusively to the latitude–longitude graticule, and in his provincial maps included into the *Yuantian tushuo* as well, manifesting his preference for Western science, while Li Zhaoluo returns to the practice of combining the graticule with the traditional square grid, showing both on one map.²³

The map by Li Mingche found in Göttingen could have hardly appeared before 1820, and most likely after the completion of the *Guangdong tongzhi* (1822), following a period of collaboration with Li Zhaoluo. This suggestion is confirmed by approximation of the date of the map to 1825-1826 in the detailed description of it by J.R. Morrison in the first volume of the *Chinese Repository* journal, published in Canton in 1832, the year of Li Mingche's passing away and the publication of the *Huangchao yitong yudi quantu*.²⁴ The lengthy description of the map by Morrison has yet to be carefully compared with the discovered version of the map, but the date of the map can be considered as reliably determined.

Choosing a cartographic template, and the ways of in which it is adapted

The map by Li Mingche is the result of a complex process of cartographic interaction. A map historian's eye immediately recognises a striking similarity between the general image of the map by Li and one of the most acknowledged cartographic representations of Asia created during the Golden Age of French cartography – “*Carte la plus générale et qui comprend la Chine, la Tartarie Chinoise, et le Thibet*” by Jean-Baptiste Bourguignon d'Anville (1697-1782) printed in 1734/1737 (map sheet: ca. 49 x 77 cm, map body: ca. 47 x 69 cm) (**Map 3**). The d'Anville map, in its turn, is based on Chinese sources – the Kangxi atlas – and, like the

²¹ For the historical setting of Ruan Yuan's project and its participants, including Li Mingche and Li Zhaoluo, see Mosca (2013), 202-212, Xue Zhang (2020), 128-132.

²² For a copy of this map in the possession of the Library of Congress [G7820 1832 .D5, <http://hdl.loc.gov/loc.gmd/g7820.ct003379a>, <http://hdl.loc.gov/loc.gmd/g7820.ct003379b>], see Lin Tieng-jen 2013, pp. 90-91.

²³ I briefly touch on the relations between the Chinese square grid and the latitude–longitude graticule in my article on Klaproth, see Dorofeeva-Lichtmann (2021).

²⁴ Morrison (1832), the approximation of the map's date is found on page 34.

role of the Kangxi atlas in Qing “court” cartography, it introduced a model for representing the Qing imperial realm in Western cartography till at least the end of the 18th century.²⁵

It would seem more likely that a Chinese cartographer would prefer to rely on the Chinese source map – the Kangxi atlas. However, it, as well as the other “court” atlases, do not include any key map. They are composed of separate sheets, each showing a part of the imperial realm, and, therefore, could not serve as a template for a general map of China. It was d’Anville who first derived a synthetic view of the entire Qing imperial realm from the separate sheets of the Kangxi atlas, having drawn a general map on a single medium-size map sheet. Only recently were the forty-one sheets of the revised copper-plate edition of the Kangxi atlas (1719) used in most scholarship assembled together into a convenient, on-line searchable, digital general map as part of the QingMaps project.²⁶

Digitisation considerably facilitates comparisons of maps of different dimensions, as it enables one to juxtapose them in a visually comparable size and thus immediately grasp the common features of their configuration. In the case of the assembled sheets of the revised copper-plates edition of the Kangxi atlas we are dealing with a huge source map. One sheet measures ca. 40 x 66.5 cm, and the mosaic of forty-one sheet with cartographic content extends up to 320 x 470 cm.²⁷ Its two successive descendants – the general maps by d’Anville and Li Mingche – are much smaller, but also considerably different to each other: d’Anville’s map is about 3.4 times smaller than the map by Li. A simple viewing of digital copies of these maps placed side-by-side shows that from the perspective of its configuration, Li’s map is generally closer to d’Anville’s than to the assembled sheets of the Kangxi atlas, for instance:

1° The *layout* of d’Anville’s map provides a classic example of a skilful intertwining of a cartographic body with concomitant elements of a map, including decorative ones, so that the sheet is filled out in a visually balanced way. Large spaces not occupied by the cartographic body in his map – the lower left and the lower right corners – are filled out by richly ornamented cartouches. The largest and most artistic cartouche to the left frames the title of the map with some details concerning the map’s sources. The smaller cartouche to the right contains a sequence of distance scales. On closer inspection, Li Mingche follows this layout, but replaces the cartouches with textual passages, thus adapting his map for a Chinese audience, as cartouches are not used at all in traditional Chinese cartography, whereas textual interpolations are quite common. The distance scales, a necessary asset of Western maps of the time, are then completely dropped by Li. Legends are also nowhere in evidence. There is also one important difference of the cartographic area encompassed in the map by Li from that by d’Anville – the former does not include the Caspian Sea and the territories to the east of it up to the Pamir Mountains, which together constitute a visually distinctive

²⁵ For the complex process of d’Anville’s appropriation of cartographic information from the Kangxi atlas, see Cams 2014; see also Hosteltler (2009), 107-115. An interesting discussion of d’Anville’s map and related issues took place in May 2014 on the [ISHMap-List] – the discussion list of the International Society for the History of the Map – with active input from Joel Kovarsky and Alexei Postnikov.

²⁶ <https://qingmaps.org/maps/Kangxi-1721> (here the revised copper-print edition is erroneously dated to 1721 instead of 1719).

²⁷ See Cams (2017), 186 and 189 with Figure 31; see also Cams (2018), 252.

unit in the upper-left (north-western) corner of the d'Anville map. In the map by Li this unit of the cartographic body is “cut out” and replaced by another textual passage, thus avoiding any major change of the layout in general. The reason for this is that these territories had never been part of the Qing Empire, and, therefore, were simply beyond the scope of Li's concerns. For the same reason, the Caspian Sea and adjoining territories are not included in the Kangxi atlas.

2° All three maps are distinguished by the prominent place given to the *Amur-Sakhalin area* (the north-eastern or the upper right corner of the maps) with the characteristic so-called Delisles's shape of the Sakhalin Island, already out-dated in Western cartography by the middle of the 18th century.²⁸ In the maps by d'Anville and Li Mingche the imperial territories in the north are delimited by a clear borderline, while in the Kangxi atlas they are cut off by the northern edge of the map, continuing beyond the mapped area.

3° Neither the map by Li Mingche, nor that by d'Anville depicts *Lake Baikal*, not because there is no space, as its place in both maps is just left blank above the northern border of the imperial realm. In the Kangxi atlas, on the other hand, Baikal is prominently depicted at roughly the middle of the northern edge of the map and is the most eye-catching lake in the atlas.

4° In the maps by Li Mingche and d'Anville *Taiwan* is depicted completely, not just by a thin band of its western coast, as is the case in the Kangxi atlas and also the later court atlases.²⁹

5° The visual focus of the map by Li Mingche is the dense cluster of the eighteen provinces of “**China Proper**”, highlighted through tinting the borderlines between them in different colours. This highlighting of the borderlines is one of the formal distinguishing features of the Golden Age of French cartography, and is applied in some copies of the map by d'Anville, for instance the one kept at the David Rumsey Collection (**Map 3**), with the difference that the highlighted units of administrative territorial division are not limited to “China Proper”, here still divided into fifteen provinces, but also include the north-eastern territories (Manchuria).³⁰ In comparison,

²⁸ I thank Robert Batchelor for this observation, who also called my attention to the step back to the early 18th century in representations of the Amur and Sakhalin area in Japanese mapping of the North Pacific in the 1780's and the 1790's.

²⁹ See, for instance the block-printed Yongzheng atlas (1729) and the copper-plate Qianlong atlas on 104 sheets (1760s), together with the revised copper-plate edition of the Kangxi atlas (1719), available on the on-line QingMaps project – <https://qingmaps.org/maps/yongzheng-1728> and <https://qingmaps.org/maps/qianlong-1766>, respectively; the Yongzheng atlas is dated here to 1728, the Qianlong atlas to 1766. The Qianlong atlas is also based on a pseudo-cylindrical projection, whereas the Yongzheng atlas is based on a square grid, with the zero point of the coordinate grid at Beijing – the zero vertical line corresponding to the prime meridian is delineated through Beijing, while the zero horizontal line is delineated slightly to the north from Beijing (corresponds to N 40°). For the Yongzheng atlas, see Cams 2021.

³⁰ For a differently coloured version of the map, see for instance, a copy kept at the BnF, shelf-mark: CPL GE DD-2987 (7144 B), <http://gallica.bnf.fr/ark:/12148/btv1b5962717m#>.

the borderlines between the units of administrative territorial divisions in the black and white print of the Kangxi atlas are barely visible.

6° Li Mingche represents *the desert zone (Goby-Tarim)* as a blank area. The same image of a blank desert space is found in the Qing “court” atlases. Using blank spaces in maps is commonly attributed to d’Anville as a means to depict poorly investigated regions, but it seems that this cartographic practice was already in use earlier.³¹ Whatever its precise origins, in the d’Anville map the desert zone is blank. This idea seems to have been introduced to China from Europe, the influence on the “court” atlases included, as traditional Chinese maps of the Ming and Qing dynasties depict the desert area in a markedly different way, using an eye-catching cartographic symbol – a broad band often tinted in black. A good example of this is the first printed edition (ca. 1556) of the atlas of the Ming Empire, the “Enlarged Comprehensive Atlas” (*Guangyutu* 廣輿圖) by Luo Hongxian 羅洪先 (1504-1564).³² In other examples, the desert area is filled out by dots imitating the sand, as is the case in the Blue Maps and their multi-coloured congeners.³³

There is, however, one substantial difference in cartometric characteristics between the map by Li Mingche and the map by d’Anville– they are *based on cardinaly different projections*. Li applies a pseudo-cylindrical projection, which had been introduced into China from the beginning of the diffusion of Western cartography, in particular through the oval world maps by Matteo Ricci (1552-1610). The special attraction of a pseudo-cylindrical projection for the Chinese audience was its partial visual resemblance to the quantitative square grid attained through maintaining straight lines of latitude. A pseudo-cylindrical projection looks very similar to a square grid in the area around the crossing of the equator and the prime meridian, which is delineated through Beijing in all three of the maps under discussion. The revised copper-plate edition of the Kangxi atlas also makes use of a pseudo-cylindrical projection, the sinusoidal Mercator-Sanson/Sanson-Flamsteed or simply Sanson projection, but rather surprisingly this was determined only about 30 years ago by one of the leading specialists of the history of Chinese cartography, Wang Qianjin.³⁴ There is, however, an interesting difference between the projection applied in the Kangxi atlas and the classic form of the sinusoidal projection. In the classic sinusoidal projection, the lines of longitude are delineated with a smooth curvature. In the Kangxi atlas the curvature of the lines of longitude is attained through a not insignificant solution from the point of view of Western cartography: within each map sheet all the longitudes are drawn as parallel straight lines declined with respect to the horizontal lines of latitude; thus, the curvature in the assembled sheets of the Kangxi atlas is obtained through progressive diminishing of the declination

³¹ For a discussion of the origins of using blank spaces in maps, commonly attributed to d’Anville, see Haguet (2016), who argues that blank spaces started to be used before d’Anville, their accreditation to him becoming established only in the 19th century. I thank Elke Papelitzky for having called my attention to this study.

³² For the two most important studies on this atlas, see Fuchs 1946 and Unno Kazutaka 海野一隆 (2010).

³³ Unno Kazutaka in his pioneering study suggested that the Chinese depiction of the desert by tiny points was eventually transmitted to Western cartography, see Unno Kazutaka (1981). For the latest survey of representations of the desert zone in Chinese cartography, see Papelitzky (2021).

³⁴ Wang Qianjin (1991). For the controversy over the use of projection in the Kangxi atlas in scholarly literature, see Jupp (2017), esp. 216.

angles. The lines of longitude, therefore, form a sequence of segments (see **Map 6**), so that I would refer to it as a *modified* Sanson projection.

Li Mingche uses curved lines of longitude, but invents a modification of a pseudo-cylindrical projection in which the sharpest curves of the lines of longitude are found at the upper left corner of the map occupied by text, while its bottom part and in the area around the prime meridian, which covers “China Proper”, the latitude-longitude graticule visually almost forms a square grid. Generally, Li tried to shape his latitude-longitude graticule as square as possible. D’Anville applies a conical (Delisle’s) projection, based on a different principle: lines of latitude are curved and lines of longitude are delineated as straight lines converging at the pole. The advantage of this projection in comparison with the pseudo-cylindrical one is that it allows for much less distortion when applied to parts of the terrestrial surface. Taking the configurational differences imposed by projections, the configurational similarity between the maps by Li and d’Anville is even closer.

In the Kangxi atlas and the map by Li the latitude-longitude graticule has 1° spacing with no further graduation, whereas d’Anville’s map uses a sparser 5° spacing, but with further graduation scales given at the map’s frame. This difference is of a technical nature, but it is worthy of note that in Chinese maps a denser graticule was adopted.

We compared the coordinates of some locations between the maps by d’Anville and Li, as well as the revised copper-plate edition of the Kangxi atlas, the block-printed Yongzheng atlas (1729) and the copper-plate edition of the Qianlong atlas on 104 sheets together with its block-printed edition on 10 rolls, both (1760s).³⁵ Some results of this comparison are provided in **Table 1**.

There is no question of any advanced geo-referencing here, like, for instance, the partial geo-referencing of the revised block-printed edition of the Kangxi atlas by David Jupp.³⁶ A geo-referencing of the map by Li Mingche applying basically the same strategy was undertaken by a GIS developer Lin Nung-Yao 林農堯 in cooperation with historian of Chinese and Korean late imperial cartography Yang Yulei 楊雨蕾.³⁷ In general, the results obtained were predictable – “China Proper” and the core parts of Manchuria are the most accurate, while the greatest errors occurred in the mapping of peripheral lands in the West and the Amur area (see **Map 4**). In addition, substantial distortions are found in the configuration of lakes (see **Map 5**), an interesting phenomenon for further study.

Table 1 shows comparisons of some test locations between the maps through naked-eye observation for eventual further elaboration via geo-referencing. Here we apply such

³⁵ A block-printed Qianlong atlas on ten scrolls of different scale dated to ca. 1760 is in the possession of the British Library (India Office Records, X/3265/1-10 + 11 (Index) & microfilm IOR Neg 1338). A reconstruction of the area covered by the map to a unified scale has been proposed by Göran Bäärnhielm in relation to his study of the Renat’s maps; see <http://goran.baarnhielm.net/Renat/index.html>; and for a general view of the reconstruction, see https://goran.baarnhielm.net/Renat/Qianlong_map_51dpi_2017-10-21.jpg. The advantage of this reconstruction is that waterways are tinted in bright blue, so that their shape, especially that of the lakes, is clearly visible. This version of Qianlong’s atlas, similarly with the Yongzheng atlas (1729), is based on a square grid, in which vertical lines conform to lines of longitude lines; latitudes are approximated by by Göran Bäärnhielm.

³⁶ Jupp (2017), see also his site https://qinshuroads.org/Kangxi_Jesuit_Maps/Kangxi_Jesuit_Maps.htm.

³⁷ The geo-referencing of the map by Li Mingche was part of the “TRANSLATION TERROIRS” project and have not yet been published. For the main premises and principles of geo-referencing the map in question, see APPENDIX authored by Lin Nung-Yao.

rough coordinates as, for instance, “latitude below Hainan” or “longitude line at the western end of Tibet”, or give the lines of latitude and longitude framing or crossing a landmark. This simple method identifies considerable differences between the maps. It reveals, for instance, continuous cartographic expansion to the north, areas of on-going recalibrations in the east and the west, and, in particular, allows one to pinpoint general similarities and differences of the map by Li Mingche with respect to the map by d’Anville and the “court” atlases. For instance, one can see that in mapping the east and the west Li followed the model of d’Anville (test areas and points: Sakhalin, Amur’s mouth, Taiwan), while the “court” atlases followed a slightly different model. Thus, only the western coast of Taiwan continued to be mapped in the court atlases; the representation of Sakhalin-Amur changed slightly when compared to the Kangxi atlas. In mapping the north, Li took into consideration the expansion of the court atlases in this direction – the northern limits of his map are considerably higher when compared to the Kangxi atlas and d’Anville’s map, and his representation of the western areas relies considerably on the later court atlases.

In the Kangxi atlas, as well as in the map by d’Anville, the central area of Tibet is still blank, though in the latter the blank area is considerably smaller, not least due to the application of a different projection. In the Yongzheng atlas (1729) one landmark appears in this area, but of quite a characteristic shape and relatively large size, which is then reproduced in the copper-plate edition of the Qianlong atlas on 104 sheets and its block-printed edition on 10 rolls (1760s). This landmark looks like two large lakes linked by a river flanked by a dense cluster of smaller lakes. The map by Li Mingche carefully reproduces this new topographical element. In the Qianlong atlases there is a prominent depiction of Lake Balkhash. Its characteristic tripartite shape is included in Li’s map, where it is the largest of the lakes. One can see that if the latitudes of these landmarks are stable, the longitudes vary slightly.

Beginning from the Kangxi atlas, the court atlases and the maps by d’Anville and Li Mingche include a distinctive fork-shaped group of connecting rivers and lakes, which represents south-western Tibet, the south-western end of the imperial realm. A separate manuscript sketch of this region was drawn by Joseph-Nicolas Delisle (1688 - 1768) (**Map 7a**).³⁸ In contrast to the court atlases and d’Anville’s map, the sketch does not depict mountain ranges framing the rivers, just a few mountains. The depiction of Western Tibet in the map by Li has a striking similarity with the Delisle’s sketch (**Map 7b**). The likeness cannot be accidental and provides additional proof that Li relied on French cartographic sources.

My working hypothesis is that Li used the map by d’Anville as an outline map, having enlarged it, re-configured it from a conical projection to the more common in China pseudo-cylindrical projection, and filled it out using topographical data according to Chinese cartographic conventions and aesthetic preferences, having relied in this respect on Chinese sources, primarily the series of the court atlases.

³⁸ *Archives nationales, Cartes et Plans*, 6JJ74A.

Accentuated landscape features and elements of administrative divisions

Chinese maps are generally distinguished by prominently drawn waterways, where rivers and lakes appear wider and larger than in Western maps of the 18th century. In the map by Li Mingche, in addition to this general rule, three main rivers are highlighted by special colours, in contrast to the grey used for smaller rivers. The three rivers are the Yellow River, tinted in ochre yellow, also seen in some other Chinese maps beginning from the Ming dynasty,³⁹ and, less common, the Yangzi River and the Amur River (*Heilongjiang* 黑龍江), both in brown.⁴⁰

Another highlighted element of the hydro-scape in Li's map is the source of the Yellow River, coloured in luminous yellow, much clearer and brighter than the tone of the rest of the river, and also contrasting with the grey used for all the other lakes. It is depicted as two adjoining oversized lakes, *Zhalinghai* 札凌海 and *Elinghai* 鄂凌海, in modern physical cartography corresponding to Gyaring/Zhalinghu 扎陵湖 and Ngoring/Elinghu 鄂陵湖 lakes, two large lakes beaded close to each other on the Yellow River. The area to the east from *Zhalinghai*, also coloured in bright yellow, is filled out by small circles, which in Chinese cosmography were graphic symbols of stars, with a note underneath indicating the actual and the earlier names of the starry area: 鄂敦他臘即星宿海 *Eduntala ji Xingxiuhai* (Eduntala = Xingxiuhai). Xingxiuhai means "Star Lodges Lake". The identification of the source of the Yellow River with Star Lodges Lake appeared in Yuan cartography and was common in Ming dynasty maps, where these lakes were depicted as an oversized double or triple lake shaped like a gourd with the small circles symbolising stars inside.⁴¹ The importance of the source of the Yellow River in the map is further accentuated verbally in one of the textual passages framing the map (the lower left passage). In Chinese cosmography the source of the Yellow River was closely related to the cosmic Kunlun 崑崙/崑崙 Mountain. In Li's map Kunlun is identified with Tianshan 天山 Mountain (literally, the "Heavenly Mountain") and is featured in the upper left textual passage, counterpart to the passage about the source of the Yellow River. In addition, immediately to the right of the source passage, in the curves of the Yellow River course, one can see the Big Jishi 大積石 and Small Jishi 小積石 mountains prominently depicted, Jishi being Kunlun's main traditional rival as the mountain related to the source of the Yellow River.⁴²

The map is distinguished by elaborate depiction of mountains, which are the most eye-catching and beautiful cartographical feature in the map, giving it an artistic touch. Mountain contours are drawn using perspective⁴³ and are coloured in vivid green, turning into blue for especially high mountains (e.g. Tianshan Mountain, Pamir (Congling 蔥嶺 = Onion Peak(s)).

³⁹ An especially bright depiction of the Yellow River in yellow is found, for instance, in the *Gujin xingsheng zhi tu* 古今形勝之圖, usually translated as the "Map of advantageous terrain past and present" (coloured woodblock reprint 1555, map sheet ca. 113,8 x 100,8 cm) in the possession of the Archivo General de Indias, Seville, Spain, shelf-mark FILIPINAS 6, R.2, N.21. See Knauth (1968), Fabio Yu-chung Lee and José Luis Caño Ortigosa (2017).

⁴⁰ I thank Alexei Postnikov (Russian Academy of Sciences) for having called my attention to the importance of the Russian border and Amur area in the map.

⁴¹ For the importance of the source of the Yellow River in the Chinese view of terrestrial space and the history of its locations from the early texts through to cartographical representations, see Dorofeeva-Lichtmann (2005-2006, 2012).

⁴² Dorofeeva-Lichtmann (2005-2006, 2012). Big Jishi is one of multiple identifications of Kunlun.

⁴³ In d'Anville's map mountains are also drawn using perspective, but are smaller and more unified.

This style of depiction of mountains is attested in Chinese cartography, beginning from the Ming dynasty.

The map is also distinguished by an emphasised depiction of the border with the Russian Empire. As is the case in d'Anville's map, the border mostly relies on the Treaty of Nerchinsk 尼布楚條約 (1689), but is longer and tinted in an eye-catching yellow colour.

Finally, the map follows the general convention on colouring the entire maritime space and leaving the background of terrestrial space blank, characteristic of late modern East Asian maps.⁴⁴ In this map the sea is coloured in monotone grey.

An anti-template: the Blue Map and congeners

The question to be answered is what was the main point of the final general map of the Chinese Empire by Li Mingche? The answer seems to be implied in the title that he chose for his map. The map titles that refer to the Qing Empire as “The Great Qing Everlastingly (literally: during 10,000 years) Unified” (*Da Qing wannian yitong* 大清萬年一統) were used intensively during a rather limited period of time – from the beginning of the 19th century through the early 1820s – although the odd copy may appear much later. This title distinguishes a cluster of maps that belong to the most beautiful large format wall-maps of the Qing imperial realm – the famous Blue Maps (duo-chrome prints) and their multi-coloured congeners. Since the Blue Maps are explored in detail in the forthcoming book by Richard Pegg and Elke Papelitzky, I shall not go into detail here. The *Bibliothèque nationale de France*, the Library of Congress and the MacLean Collection provide links to the specimens of the Blue Maps in their possession,⁴⁵ as well as to the multi-coloured versions.⁴⁶ Both groups share many common features in their configuration and content. This allows one to refer to them as to a distinctive cartographic type.⁴⁷ The maps encompass the same territory as the map by Li Mingche, and according to Richard Pegg, the term “unified” (*yitong* 一統) in their titles highlights the Qianlong emperor's unification of the four regions outside “China proper” – Manchuria, Mongolia, Tibet and Chinese Turkestan (Xinjiang), which were finally brought under Qing rule after 1759. One can add to this valuable observation that this term was borrowed from late Ming cartography.⁴⁸ Pegg also points out political reasons for the multiple re-prints and re-editions of these maps.⁴⁹

⁴⁴ See Lange and Hahn (2023).

⁴⁵ BnF: shelf-mark GE A-1096 (RES) <http://gallica.bnf.fr/ark:/12148/btv1b550095891?rk=836914;0>; Library of Congress: shelf-mark G7820 1816 .D3 <http://hdl.loc.gov/loc.gmd/g7820.ct002256>; MacLean Collection <https://www.macleancollection.com/map-library>. Pegg (2014), 18-21, 23-24 and 20-21 with Figure 6, see also a monochrome (black print) version of the map in the MacLean Collection, Pegg (2014), 18 and 22 with Figure 7.

⁴⁶ BnF: shelf-mark GE C-5353 (1-3 RES) <http://gallica.bnf.fr/ark:/12148/btv1b7200281h?rk=643780;0>; Library of Congress: shelf-mark G3200 1811 .D3 <http://hdl.loc.gov/loc.gmd/g3200.ct003403>; for a multi-coloured map in the MacLean Collection, see Pegg (2014), 26-27 with Figure 8, dated to 1883 – an example of a rare late remake.

⁴⁷ See Hostetler (2009), 94-95. For illustration she provides the BnF copy of the “Blue” Map [GE A-1096 (RES)], see Hostetler (2009), 96-97 with figure 3.2, which she mistakenly dates to 1767, the date of creation of Huang Qianren's 黃千人 (1694-1771) prototype map.

⁴⁸ E.g. 皇明大一統地圖 *Huang Ming Da yitong ditu* (“Atlas of the Illustrious Ming Great Unity”, 1636).

⁴⁹ See Pegg (2014), 18-26. Since Pegg's book is a catalogue of the MacLean collection of maps, his primary concern is the maps of “The Great Qing Everlastingly Unified” acquired for this collection.

All extant multi-coloured versions bear the following title:

Da Qing wannian yitong Tianxia quantu 大清萬年一統 天下全圖
("The Complete **Under-Heavens** Map of the Great Qing Everlasting Unified").

The Blue Maps, with one late exception, are entitled in a slightly different:

Da Qing wannian yitong dili quantu 大清萬年一統 地理全圖
("The Complete **Terrestrial Organisation** Map of the Great Qing Everlasting Unified").⁵⁰

The difference between the titles is only in the chosen definition of the entire terrestrial space – the “Under-Heaven” (*Tianxia* 天下) – in multi-coloured versions and the “Terrestrial Organisation” (*Dili* 地理) in the Blue Maps.⁵¹ The title of the map by Li Mingche stands out from these:

Da Qing wannian yitong jingwei yutu 大清萬年一統 經緯輿圖
“**Comprehensive Map Applying the Longitude-Latitude Graticule** of the Great Qing Everlastingly (literally: during 10.000 years) Unified”).

The difference in defining the general character of the map as “complete” (*quan* 全) for the Blue and multi-coloured maps, and “comprehensive” (*yu* 輿) in the map by Li Mingche can be considered as a minor difference between synonyms.⁵² The main emphasis in the title of the map by Li is laid on applying the longitude-latitude graticule. It can, then, be translated as “a Western style map of the Great Qing Everlastingly Unified”, and, indeed, the “Blue Maps” and their coloured congeners encompass the same territory as Li’s map, but do not use a cartographic projection. They might use an implicit quantitative square grid, but this is questionable. Therefore, the Blue Maps served as an anti-template for Li, which he aimed to reformat into a modern “Western-style” version of the “Qing Empire Everlastingly Unified”.

Acquisition history

The very interesting question that requires clarification is how a map drawn in Canton (Guangzhou) landed up in Göttingen, and why it was considered as missing for about a century and a half. The last information about the map before its rediscovery can be found in the article by William Huttman published in 1844, where he describes a copy of the map, relying on the *Chinese Repository*, as to be presented to the Royal Geographical Society in Great Britain.⁵³ However, Huttman discusses a map *and* an atlas by Li Mingche. Assuming

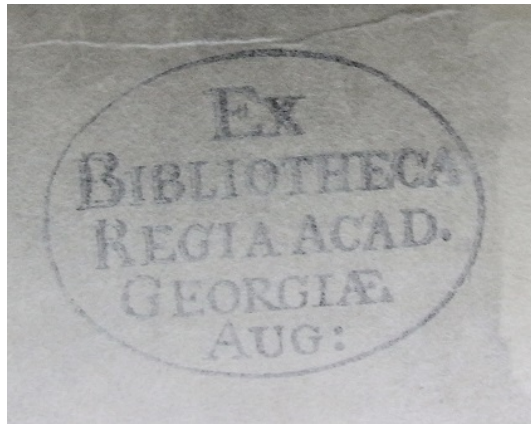
⁵⁰ The exceptional copy once belonged to the Floyd Sully collection. It bears the title common for the coloured versions – “The Complete Under-Heavens Map of the Great Qing Everlasting Unified” (*Da Qing wannian yitong Tianxia quantu* 大清萬年一統 天下全圖). In addition, its date seems to be excessively detailed – the first day of the first decade of the 3rd month of the 3rd year of Daoguang (道光三年歲在癸未桃月上浣吉旦 *Daoguang san nian sui zai gengwei taoyue shangwan jidan*), which corresponds to 1823, see Davis (2015), 24-27.

⁵¹ I discuss the term *dili* and its various translations in Dorofeeva-Lichtmann (2005), see also Behr (2007), 114.

⁵² Regarding the character *yu* 輿, literally “chariot carriage” and a symbol of the Earth, see my contribution to Nürnberg (2016), 191-192, footnote 136.

⁵³ Huttman (1844), see a study of this article by Eben von Racknitz (2019).

that the general map of the Chinese Empire by Li Mingche referred to by Huttmann is the one that is now in Göttingen, it should have arrived there shortly after this publication, as the map bears on the verso an acquisition stamp of the library that was in use from about 1765 through 1850.



It is not especially strange that the map was sent to Göttingen, as the Georg-August-Universität Göttingen was founded in 1734 by George II (r. 1727 – 1760), King of Great Britain *and* Elector of Hannover, and at least till the mid-19th century maintained very close relations with Great Britain.⁵⁴ What is much more surprising is that no copy of the printed map has survived in China. Thus, in the *Continued Gazetteer of Panyu county* (*Panyu xian xuzhi* 番禺縣續志), the gazetteer of Li Mingche's place of birth, composed during the reign of the Emperor Xuantong 宣統 (溥儀, r. 2.12.1908 – 12.02.1912), the map is reported as “not in evidence, missing” (*wei jian* 未見).⁵⁵

It should be noted that until recently it may have been that the map had been a wrongly catalogued item from among the Asch Collection, a donation to Göttingen University by Baron Georg Thomas von Asch (1729-1807), a member of a German family in the service of the Russian Tsars, which contains several East Asian maps and Russian maps of Siberia and the Far East.⁵⁶ Yet, having meticulously checked all the documents related to the items sent by Baron von Asch, including the lists composed by his own hand, I could find no trace of the map.

Conclusion

The period of the recurrent printing of the Blue Maps and their multi-coloured congeners (1800 -1820s) coincided with the period of professional maturity of Li Mingche. Taking into consideration his passionate interest in Western science, he should have thought that these maps did not correspond at all to the new standards of cartography, which started to be diffused in China with the production of the “court” atlases based on the application of new

⁵⁴ For an attempt to trace the map's journey from Canton (Guangzhou) to Göttingen, see Zhu Hongbin 朱泓彬 (2023).

⁵⁵ (*Xuantong*) *Panyu xian xuzhi* 宣統番禺縣續志, juan 29, 4a. I am grateful to Cathleen Paethe for calling my attention to this reference to the missing map.

⁵⁶ For Japanese cartographic sources in the Asch Collection, see, for instance, Dorofeeva-Lichtmann and Simonova-Gudzenko (forthcoming 2023).

survey methods. For some reason the Qing “court” atlases do not include any general map of the Chinese Empire, so a “modern” general map of China was still missing. Wishing to keep up with the turn in Chinese cartographic surveying, he made an attempt to create such a map. Being an enthusiastic adept of Western science, he used the map by d’Anville as an outline, enlarging it, re-configuring it from conical projection to the more common in China pseudo-cylindrical projection, and filling it out with topographical data according to Chinese cartographic conventions relying on Chinese sources. However, having changed the projection, he took a step backward from the perspective of modern Western cartography, introducing into his map more distortions. He also completely overlooked the importance of distance scales, neglecting to provide any in his map. Yet, despite all his efforts to make the map accessible to the educated Chinese public, it does not seem to have elicited much response in his homeland, in contrast to his much more traditional *magnus opus* – “Illustrations and Elucidations on the Round Heavens” – and the single copy of it that has survived to date found its home in Göttingen University Library.

TABLE 1. COMPARATIVE TABLE OF SOME TEST LOCATIONS⁵⁷

	Kangxi 1719 copper- plate	Yongzheng 1729 block-print	D’Anville 1734/1737 copper- plate	Qianlong 1760s copper-plate on 104 sheets	Li Mingche ca. 1825- 1826 block-print
				Qianlong 1760s block-print on 10 rolls (British Library, below marked as BL)	
colour	black&white	black&white	hand- coloured black&white print	black&white	hand- coloured black&white print
prime meridian	Beijing	Beijing	Beijing	Beijing	Beijing
graticule spacing	1° with no further graduation	1° with no further graduation	5° with 1° graduation scale	1° with no further graduation	1° with no further graduation
extreme south, Qing imperial realm and mapped territories	18°N	<i>33° S from Beijing</i>	18°N	18°N	18°N

⁵⁷ Outstanding characteristics are marked in **red**, similarities are marked in **blue**.

(latitude below Hainan)					
Hainan , latitude through the top	20 °N	30°S from Beijing	20 °N	20°N	20°N
extreme north , Qing imperial realm (latitude)	55°N	open	56°N	open	58°N Hinggan mountain range
extreme west 1 , Qing imperial realm (longitude line at the western end of Tibet, between the vertical river-course and mountain range)	44°W	45-46°W	40°W	45°N	44°W no mountain range, similar to Delisle's sketch
extreme west 2 , Qing imperial realm (longitude through the middle of the Pamirs)	40°W western end of the mapped territories	40°W middle of 2 distinct units of the Pamirs	40°W west of "Kashgar"	48°W west of Xinjiang borderline	48°W
extreme east longitude through the upper eastern side of Sakhalin	30°E	26°E longitude delineated to the east from the upper eastern end of Sakhalin	30°E	31°E	30°E
Sakhalin , latitude through the southern end (slightly above its end)	50°E	9°N from Beijing	50°N	50°N	50°N
Amur's mouth ,	25°E	22°E	25°E	26°E	25°E

longitude					
Taiwan, the most eastern longitude at the top	5°E	8°E	5°E	6°E BL: 8°E	5°E Taiwan ends shortly before 6°
Taiwan, depicted shape	western coast	western coast	entire island	western coast BL: western coast	entire island
longitude through Liaodong's end – Shandong's middle	5°E	5°E a bit shifted to the west, shift due to projection	5°E	5°E	5°E
Lake Balshakh latitudes below and above; longitude to the west, longitude through the eastern end of the lake	-	-	-	46-48°N 37-41°W BL: 46-48°N (approx. GB) ⁵⁸ 37-41°W	46-48°N 36-40°W
Lakes cluster in central Tibet latitudes below and above, longitude to the west, longitude through the eastern end of the right lake	-	33-37°W 5°-7°S from Beijing	-	34-38°W 33-35°N BL: 33-37°W 35-37°N (approx. GB)	33-37°W 33-35°N mistake in degrees of latitudes at the left side: 35°N instead of 33, 28 instead of 18°N
Lake Namtso with an adjoining lake in the west	crossed by 32°N 25-28°W	29-32°W 10-11°S from Beijing	31-32°N crossed by 25°W	crossed by 32°N 26-29°W	crossed by 32°N 25-28°W
Lake Yamdrokto (the ring lake)	crossed by 30°N 25-26°W	30-31°W 13-14°S from Beijing	28-29°N 25-26°W	crossed by 30°N 26-27°W	crossed by 30°N 25-26°W

⁵⁸ Approximated by Göran Bäärnhielm, see https://goran.baarnhielm.net/Renat/Qianlong_map_51dpi_2017-10-21.jpg.

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APPENDIX

Technical notes to geo-referencing of the *Da Qing wannian yitong jingwei yutu* 大清萬年一統經緯輿圖 (ca. 1825-1826) by Li Mingche 李明徹 (1751-1832) (maps 4 and 5)

Lin Nung-Yao 林農堯

A comprehensive description of geo-georeferencing of the map in question is beyond the scope of this article. Below are the main premises and principles of this process.

1. Cartometric properties of the map by Li Mingche in relation to geo-referencing

Geo-referencing of the map in question is facilitated by application in it of the latitude-longitude graticule in a pseudo-cylindrical projection with 1° spacing. The prime meridian is delineated through Beijing. The graticule was used as a reference frame for localising of the mapped area.

2. Re-projecting Map to Web Mercator - EPSG:3857

Once the localisation was determined, the map was re-projected to a cylindrical projection – the widely used coordinate system - Web Mercator - EPSG:3857, which is adopted by Google Maps, OpenStreetMap, Microsoft Bing Maps and other web-based online map services.⁵⁹ This method has two advantages: it can use rich program resources of the GIS technology and then further compare the obtained results with more maps. It should, however, be taken into consideration that due to the characteristics of the EPSG:3857 coordinate system, the distortion increases as we approach the poles, in the case of the map by Li Mingche the northern territories of the Qing Empire. The program applied for geo-referencing of the map by Li Mingche takes into consideration the distortion factor and is not affected by it.

3. Alignment of the map by Li Mingche with the OpenStreetMap

We aligned the re-projected map by Li Mingche with the OpenStreetMap. This allows one to compare the discrepancies between the two maps in localisations of cities, towns and any other locations explicitly marked on the map by Li Mingche as “points”,⁶⁰ or which can be considered as “points” (e.g. mountain tops). Specifically, the applied method enables one to estimate the discrepancies between the geographical coordinates of the “points” on Li Mingche’s map and their precise coordinates based on EPSG:3857, and thus estimate the accuracy of the map in question. For the time being the geo-referencing was done with respect to 231 “points” (Map 4).

⁵⁹ "WGS 84 and the Web Mercator Projection NGA Office of Geomatics" . National Geospatial-Intelligence Agency. 2014-05-16. Archived from the original on 2014-08-09. , see [PDF](#) and <https://epsg.io/3857>.

⁶⁰ Different types of settlements in the map are designated by different legend symbols – small squares, diamond symbols, circles. Their common feature is that they are all accentuated by framing in red colour. Geographical coordinates of the “point” is determined at the centre of these legend symbols.

Some long-shaped and large features of landscape, such as rivers, mountain ranges and lakes, as well as units of administrative divisions cannot be geo-referenced only by “points”, so we also compared their configurations represented by lines or polygons in the map by Li Mingche with their configurations in the OpenStreetMap. We analysed configurations of 30 mountain ranges and 38 lakes. In addition, the system of waterways was extracted from the map. Configurations of the lakes are shown on **Map 5**.

4. Evaluation of accuracy: degrees of discrepancy in geographical coordinates

For representing shifts between geographical coordinates of “points” on the map by Li Mingche and the OpenStreetMap we use directional arrows. An arrow indicates the direction from a “point” found on the map by Li Mingche to its accurate localisation on the OpenStreetMap. For representing the degrees of discrepancy between geographical coordinates of “points” in the map by Li Mingche and the OpenStreetMap, we use five different colours for arrows. The colour depends on the length of the shift or distance between the location of "points" on the map by Li Mingche and its accurate geographical coordinates. We have chosen five levels of shifts corresponding to colours, as follows:

COLOUR OF ARROWS	SHIFT LENGTH (OR DISTANCE) BETWEEN LOCATIONS OF “POINTS” IN THE MAP BY LI MINGCHE AND ACCURATE GEOGRAPHICAL COORDINATES
DeepPink	0km~50km
Blue	50km~100km
Maroon	100km~150km
Black	150km~200km
Red	200km~250km

For determining the shifts of lakes, shown on **Map 5**, we use the centroids of polygons, representing the lakes. We also took into consideration calculations of the areas of lakes.

5. Fragmentation of a geo-referenced map into smaller sections

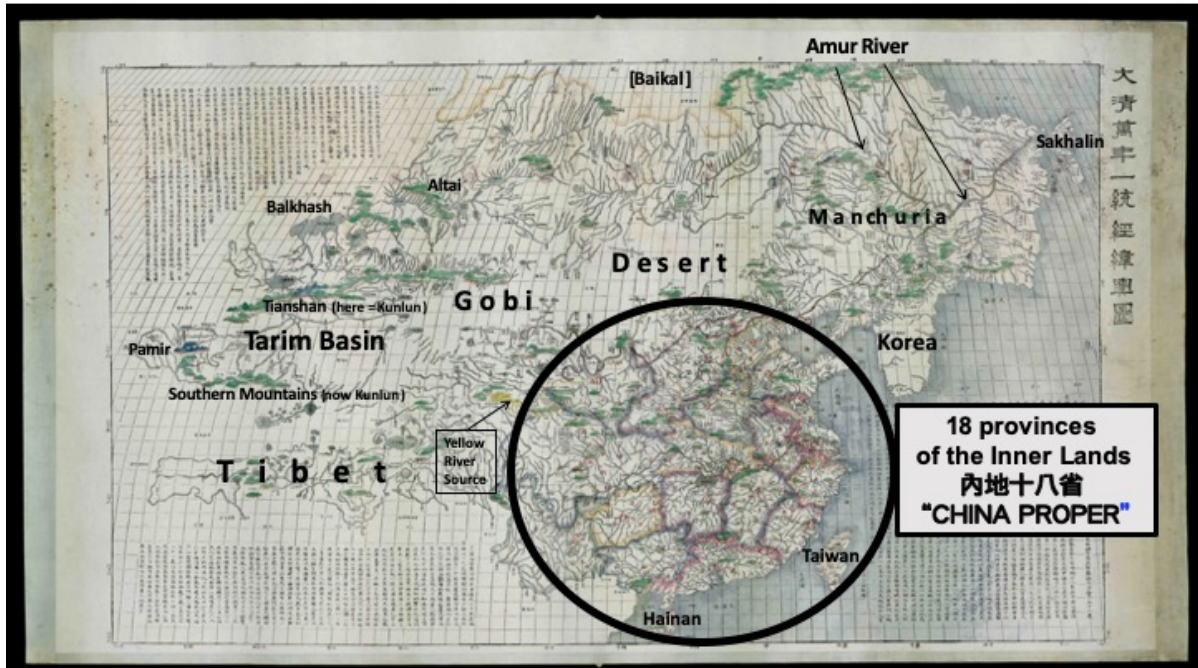
Marking the discrepancies between the map by Li Mingche and the OpenStreetMap using methods described above, one can divide the former into smaller sections based on the degree of its discrepancies. These smaller units can then be further geo-references in a more refined way.

List of Maps

Map 1. “Comprehensive Map Applying the Longitude-Latitude Graticule of the Great Qing Everlastingly (literally: during 10,000 years) Unified” (*Da Qing wannian yitong jingwei yutu* 大清萬年一統 經緯輿圖), ca. 1825-1826, author: Li Mingche 李明徹 (1751-1832), hand-coloured woodblock print, dimensions of the map sheet including the cloth frame: ca. 96 x 174 cm, map body: ca. 86 x 148 cm. Göttingen State and University Library, shelf-mark: **Cod. Ms. Mapp. 34.**



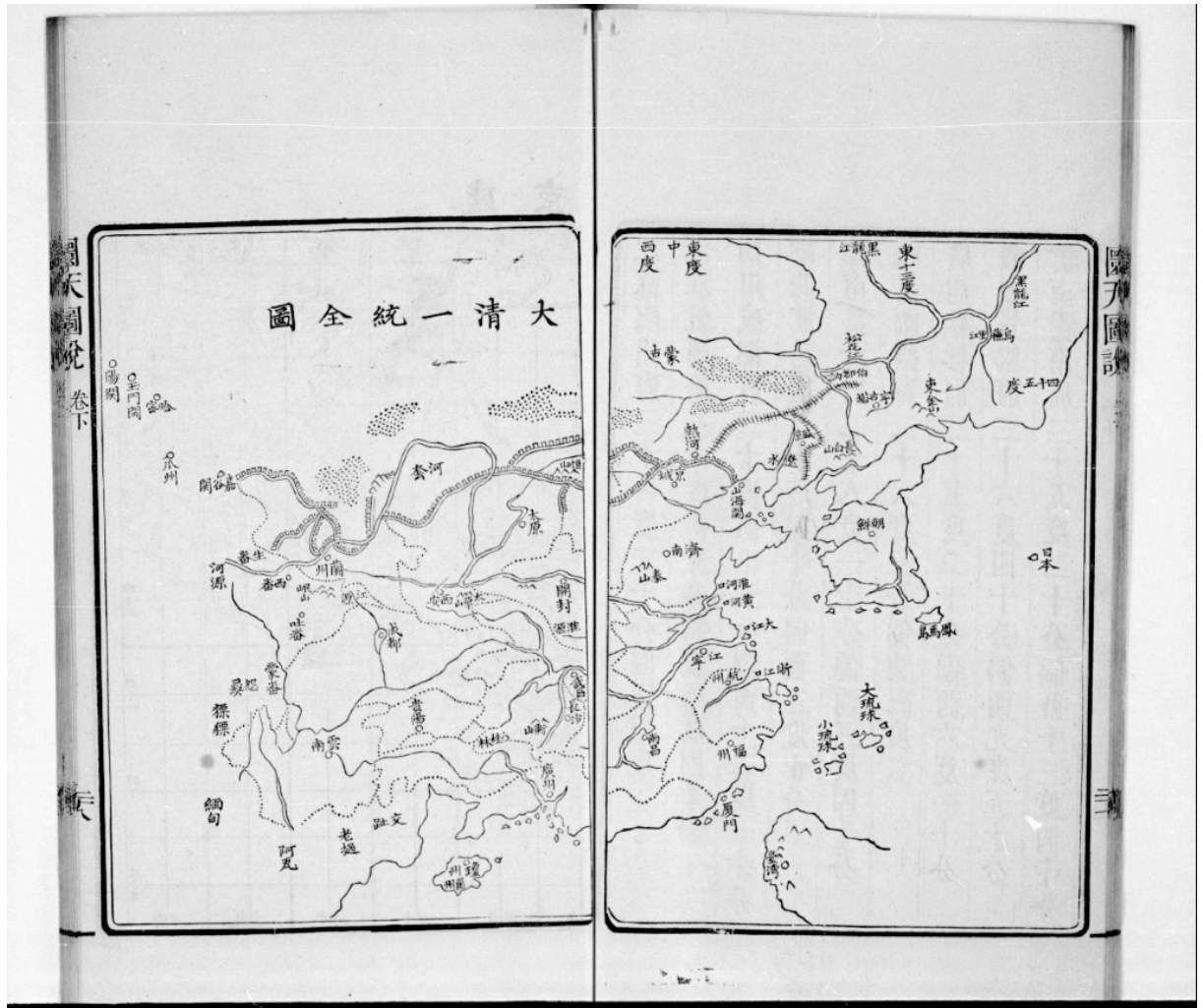
Map 1a. Annotated “Comprehensive Map Applying the Longitude-Latitude Graticule of the Great Qing Everlastingly (literally: during 10,000 years) Unified” (*Da Qing wannian yitong jingwei yutu* 大清萬年一統 經緯輿圖), notes by the author of this article.



Map 2. “Complete Map of the Great Qing Unified” (*Da Qing yitong quantu* 大清一統全圖)

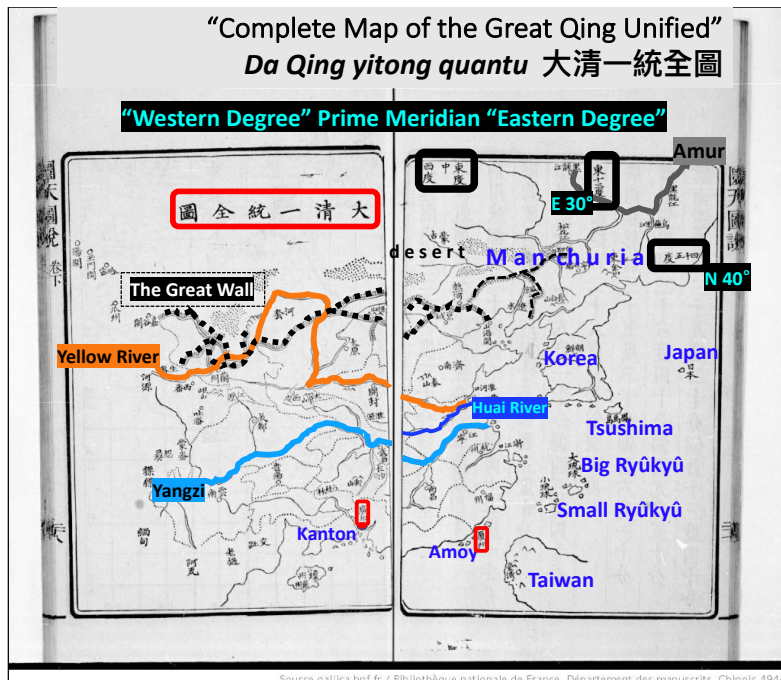
Source:

Li Mingche 李明徹 (1751-1832), *Yuantian tushuo* 圓天圖說 (The Round Heavens Illustrated and Explained), 3 vols. N.p.: Songmeixuan Press 松梅軒藏板, 1819-1820; vol. 3 (*juanxia* 卷下), pp. 37b-38a.



Source gallica.bnf.fr / Bibliothèque nationale de France. Département des manuscrits. Chinois 4944

Map 2a. Annotated “The Complete Map of the Great Qing Unified” (*Da Qing yitong quantu* 大清一統全圖), notes by the author of this article.

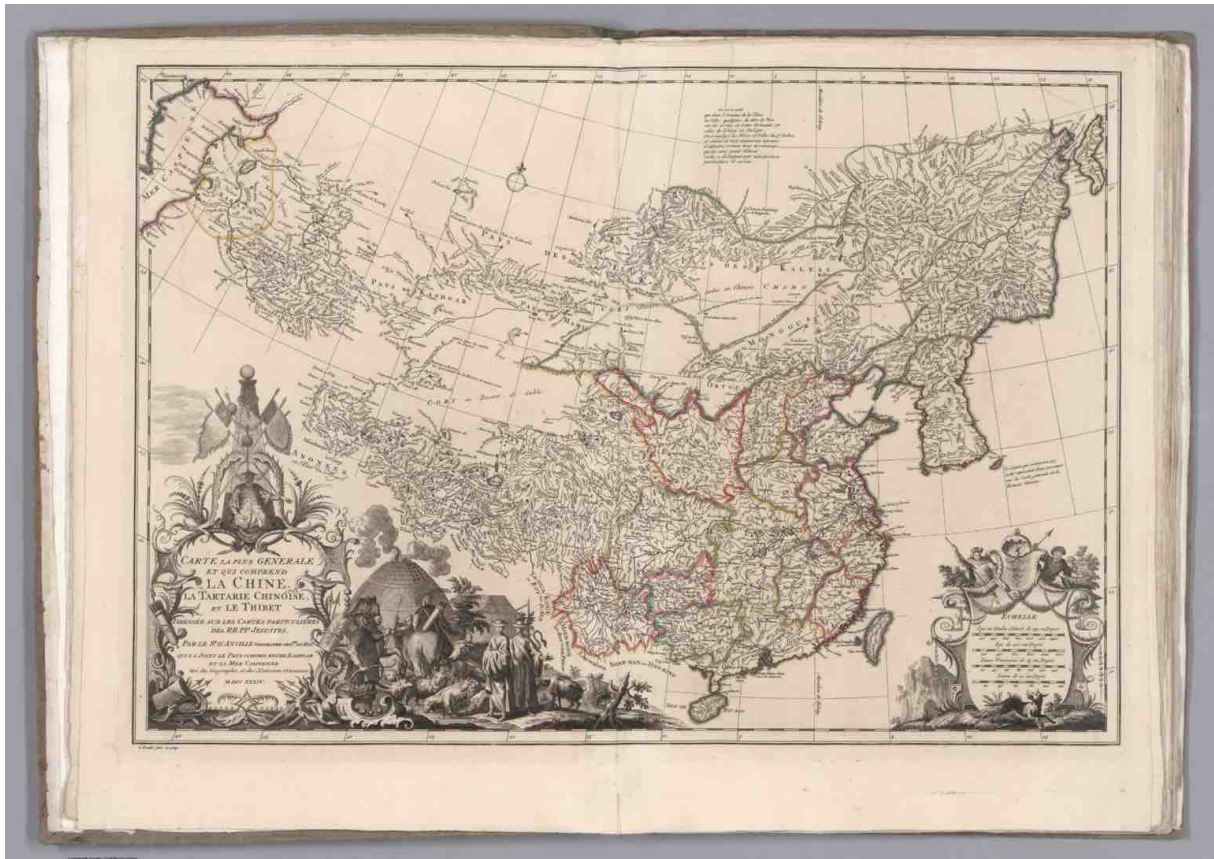


Map 3. “Carte la plus générale et qui comprend la Chine, la Tartarie Chinoise, et le Thibet” by Jean-Baptiste Bourguignon d’Anville (1697-1782), printed in 1734/1737, hand-coloured copper-print, dimensions of the map sheet: ca. 49 x 77 cm, map body: ca. 47. x 69 cm. David Rumsey Collection, shelf-mark: **13322.010**

Source:

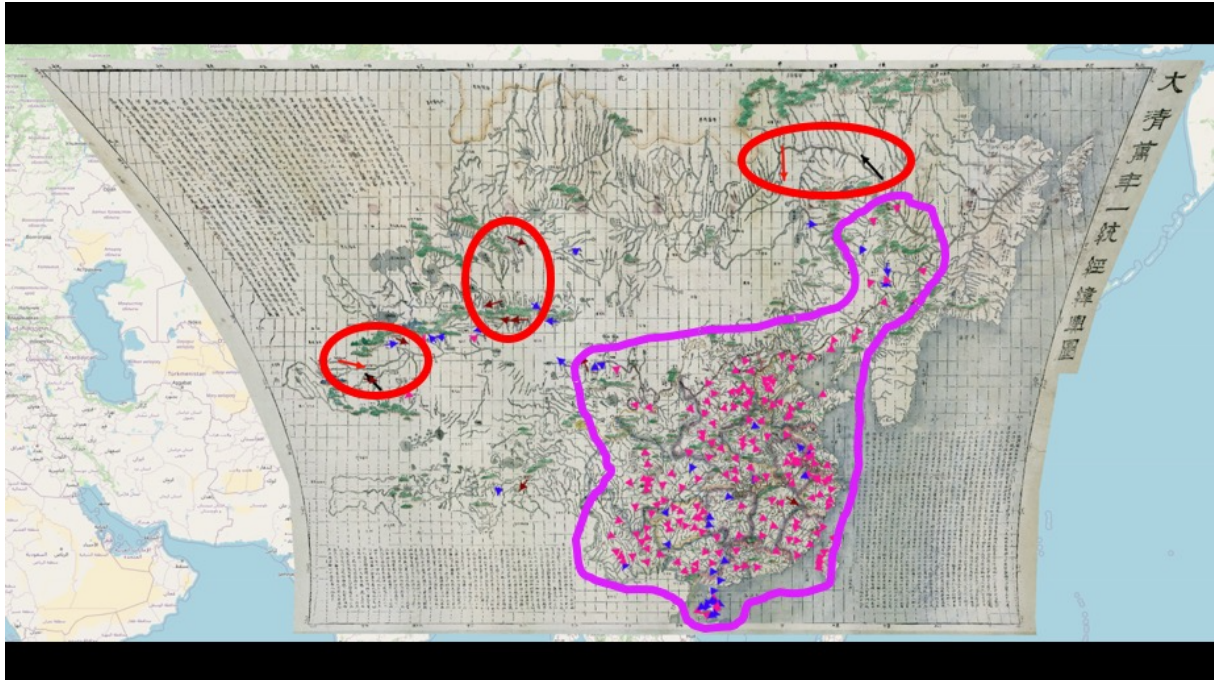
Jean-Baptiste Bourguignon d’Anville, *Nouvelle atlas de la Chine, de la Tartarie chinoise et du Thibet*, La Haye : chez Henri Scheurleer, 1737

<https://gallica.bnf.fr/ark:/12148/btv1b53096745m/f1>, first map inserted after page 12.



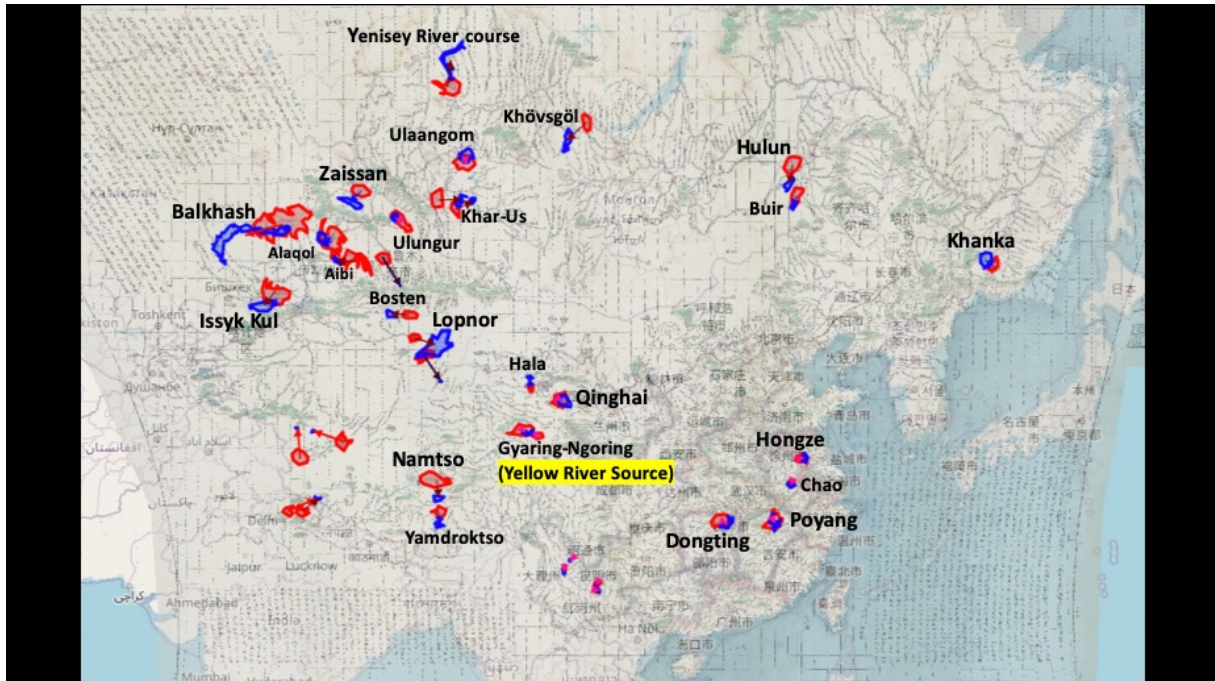
Map 4. Re-projected and geo-referenced “Comprehensive Map Applying the Longitude-Latitude Graticule of the Great Qing Everlastingly (literally: during 10,000 years) Unified” (*Da Qing wannian yitong jingwei yutu* 大清萬年一統 經緯輿圖), ca. 1825-1826, author: Li Mingche 李明徹 (1751-1832), Göttingen State and University Library, shelf-mark: **Cod. Ms. Mapp. 34.**

Note: Arrows show the degrees of shifts of geographical coordinates on the map in question with respect to accurate coordinates, see APPENDIX by Lin Nung-Yao 林農堯, esp. § 4. The area with high accuracy is circumscribed in magenta, areas with the highest distortions in red.



Map 5. Analysis of lakes in the re-projected and geo-referenced “Comprehensive Map Applying the Longitude-Latitude Graticule of the Great Qing Everlastingly (literally: during 10,000 years) Unified” (*Da Qing wannian yitong jingwei yutu* 大清萬年一統 經緯輿圖), ca. 1825-1826, author: Li Mingche 李明徹 (1751-1832), Göttingen State and University Library, shelf-mark: **Cod. Ms. Mapp. 34**.

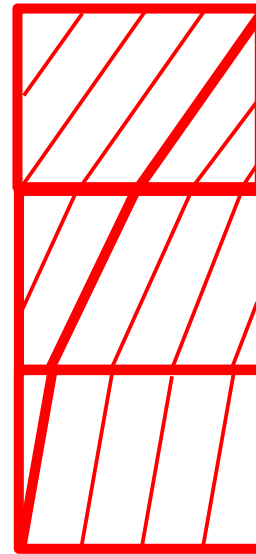
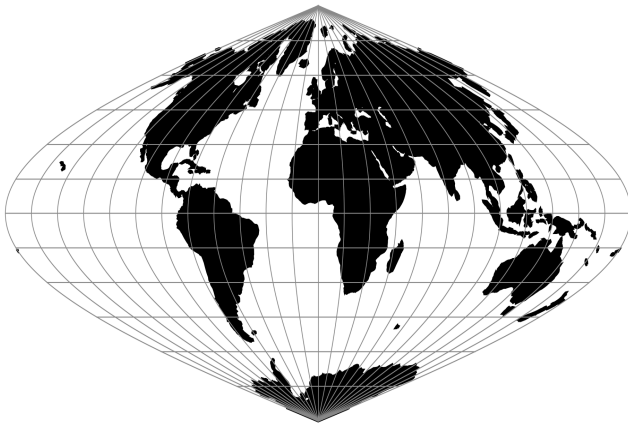
Note: real configurations of lakes are marked in blue, and their configuration in the map in question in red.



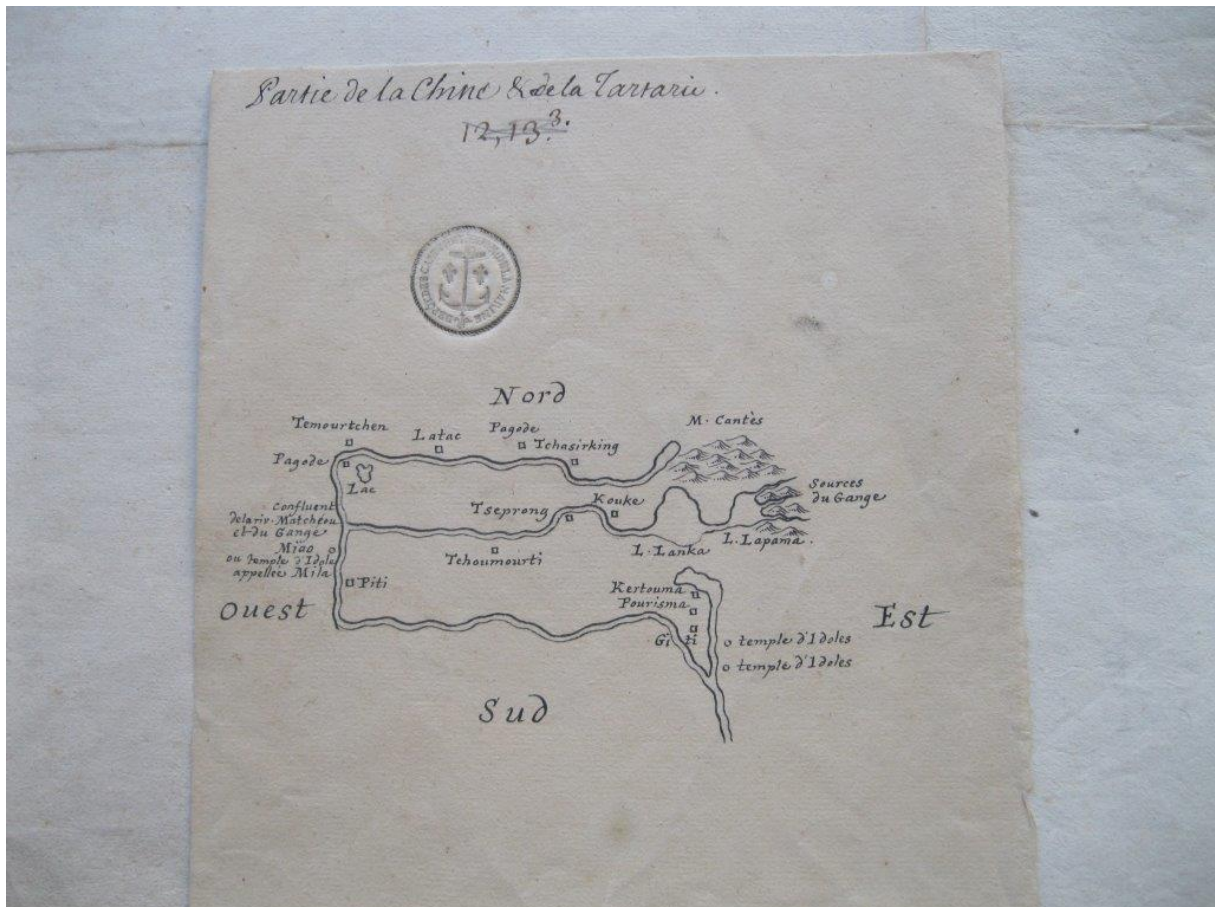
Map 6.

Left: a sinusoidal projection with the lines of longitude delineated with a smooth curvature.

Right: a model of a sequence of map sheets, where within each map sheet all the longitudes are drawn as parallel straight lines declined with respect to the horizontal lines of latitude. The curvature of the lines of longitude is attained through progressive diminishing of their declination angles. In this case the lines of longitude form a sequence of segments.



Map 7a. A manuscript sketch map of the Western Tibet by Joseph-Nicolas Delisle (1688 - 1768), *Archives nationales, Cartes et Plans*, shelf-mark: **6JJ74A**.



Map 7b. Fragment of the “Comprehensive Map Applying the Longitude-Latitude Graticule of the Great Qing Everlastingly (literally: during 10,000 years) Unified” (*Da Qing wannian yitong jingwei yutu* 大清萬年一統 經緯輿圖) showing the Western Tibet.

