Was Lorenz Fries’s 1525 Strasbourg Ptolemy Atlas Complete?
Or Were Two Maps Omitted?

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ABSTRACT: Two manuscript maps, one of the Pacifi c and the other of Russia/Tartary, have emerged since 2009. In this article they are described in detail, set into context, and an argument is offered for identifying them as having been made in Strasbourg for the tabulae modernae section of the 1525 edition of Ptolemy’s Geography. Had the two maps been included as intended, they would have completed the modern mapping of the world.

KEYWORDS: Ptolemy’s Geography, Strasbourg, Tabulae antiquae, Tabulae modernae, Tabula Moderna Alterius Hemisphaerii, Tabula Moderna Tartarie, Peter Apian, Marcus Beneventano, Hernán Cortés, Lorenz Fries, Dmitrii Gerasimov, Johannes Grüninger, Hernán Magellan, Willibald Pirckheimer, Claudius Ptolemy, Johannes Stumpf, Maximilianus Transylvanus, Martin Waldseemüller, Bernard Wapowski, Pacific Ocean, Tartary, Russia, woodblocks, worksheets, draft maps, lost maps, historiated initials, text on verso, radiocarbon dating, ink analysis, stylus markings, toponymy, watermarks, map identifi cation, research methodology.

The spread of printing from moveable type in Europe in the fi fteenth century created a new lease of life for many ancient and medieval texts. Publishers rushed to capture the market for the most important works in circulation. From the start, the emphasis was on authors who had stood the test of time, notably those of Antiquity, the Church Fathers, and the leading medieval exegetes, together with the Bible itself. Among these was Claudius Ptolemy, whose enduringly popular Geography was fi rst printed in Latin in Vicenza in 1475, followed by his astrological work, the Tetrabiblos (Venice, Liber quadripartitus, 1484), and in due course the astronomical Almagest (Venice, 1496).1 By the turn into the sixteenth century, one Italian and six Latin editions of the Geography had been published, and by 1525 another six in Latin had appeared, only one without maps.2

Ptolemy, c.150, drew up a list of more than 8,000 place-names with coordinates (longitude and latitude) that cover the world between Tenerife (0 degrees) and Cattigara (180 degrees east). The other half of the world was then unknown. When plotted, his list of places results in ten maps of Europe, four of Africa, twelve of Asia and one of the world, together totalling twenty-seven tabulae antiquae. Early modern mapping more than a thousand years later required adaptations of Ptolemy’s maps, giving rise to the tabulae modernae. The process of ‘modernization’ was fi rst applied to existing Ptolemaic maps, but when this became too difficult, the modern maps were separately designed and added to the old ones. The Portuguese and Spanish voyages of discovery brought about fundamental changes in Ptolemaic maps of Asia and completely new ones for (southern) Africa and the Americas.

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The four Strasbourg editions of the Geography differed from previous ones by having a separate part dedicated to *tabulae modernae*. The 1513 and 1520 editions by Martin Waldseemüller had 20 modern maps; the 1522 and 1525 Lorenz Fries editions had 23 modern maps. The last two editions were printed by Johannes Grüninger. This article is concerned with Grüninger’s 1525 edition, for two manuscript maps have recently come to light that appear to be draft *tabulae modernae* intended for this edition. The first of these maps came to my notice in 2009. Entitled *Tab[ula*] *Moderna Alterius Hemisphaerii*, it shows the Pacific Ocean with parts of the Americas and Asia (Fig. 1). My preliminary observations on it were reported at two international conferences and published in *The Globe*, the Journal of the Australian and New Zealand Map Society in 2012. The second map, which I purchased in 2011, was presented for sale in London at Sotheby’s auction house. It is entitled *Tab[ula] Mod[erna] Tartarie*, and shows Russia from the Baltic to Scythia, east of the Urals (Fig. 2). At my request, the map of Tartary was studied by Dr Peter Meurer, who published his comments in *Cartographica Helvetica*. Here, the results of both studies are amalgamated, and my conclusion is that the two *tabulae* are final drafts for new *tabulae modernae* that were to be included in Grüninger’s 1525 Ptolemy edition. However, it would seem that the maps were never printed for reasons of time and religious strife. Thereafter the drafts were lost, and their existence remained unknown to historians of cartography until now. Their rediscovery provides fresh insights into *tabulae modernae* in general and into the earliest mapping of Russia, Siberia, Mexico, South America, the Pacific and the Philippines in particular.

Why did these *tabulae* disappear? In general, few traces remain of the preliminary manuscript sketches and worksheets needed before a new map could be printed. Some examples of the map-making process have survived, as in the case of the woodcut map of the German lands by Johannes Stumpf (1547) and the highly detailed drafts for at least five of the county maps of England by William Smith. The *tabulae* in question in this article are most likely final drafts that were intended to be discussed with the mapmaker, corrector, publisher and financier (Hans Koberger); since they are complete, with text on the verso, they could hardly have been worksheets destined to be pasted on to the woodblock for cutting.

**The Strasbourg Geography and Lorenz Fries**

The first two editions of the Strasbourg Geography were printed by Johann Schott in 1513 and 1520. These atlases had 47 maps by Martin Waldseemüller, including a *Supplementum* with 20 modern maps. Among them were the first *tabulae modernae* of Asia, Africa (two), and the Atlantic Ocean with parts of the Americas. Thus a greater part of the newly discovered world had been mapped and was printed in 1513, providing a broad distribution of this new knowledge throughout Europe.

In 1520, the year of publication of the second edition of the Geography, Johann Grüninger reached an unspecified agreement with Schott that allowed him to produce a new edition of the atlas. He also bought the woodblocks of the maps, possibly to avoid a parallel reprint. Grüninger then went on to publish another edition in a smaller and cheaper format that was updated with modern maps to show recent discoveries. The man in charge was Lorenz Fries.

Lorenz Fries (1485?–1531) was neither a native of Strasbourg nor originally a mapmaker. He practised as a doctor and astrologer in Colmar (Alsace) and was a productive writer. His earliest publications were medical books and astrological treatises written in German. The publisher of almost all his books was Johann Grüninger in Strasbourg. Fries eventually married and settled in Strasbourg becoming a burgher in 1520. About the same time he was installed in the guild of goldsmiths and printers. While continuing to work as a physician, he became involved in Grüninger’s geographical publications, which included the heritage of Martin Waldseemüller who had died in 1520. Fries renounced his Strasbourg citizenship under religious duress on 11 May 1525 and resumed his medical and astrological work, first in Trier and later in Metz, both largely Catholic cities. No cartographical work of his is known after 1525.

For the 1522 edition of the Geography, Fries reduced Waldseemüller’s maps by about 23 per cent and simplified most of them. The only exception was the *Tabula Asiae V*, for which he used the 1520 woodblock. He therefore needed to have 46 new woodblocks cut, for each of which a potentially disposable manuscript worksheet must have been provided. The text of Book VIII of Ptolemy, describing the different parts of the world, was printed on the back of the corresponding *tabulae antiquae* within an elaborate woodcut frame. The texts on the backs of the *tabulae*...
Fig. 1. Tabula Moderna Alteius Hemisphaerii (Pacifica tabula). Manuscript. Ink on paper. 40.5 × 54 cm. One of two hitherto unknown tabulae modernae apparently produced by Lorenz Fries for Johannes Grüninger’s 1525 edition of Ptolemy’s Geography (Strasbourg), showing the west coast of the Americas and the Pacific Ocean. See Appendix 1 for the inscriptions. (Private collection.)
Fig. 2. Tab[ula] Mod[erna] Tartaric. (Tartary tabula). Manuscript. Ink on paper. 40.5 × 54 cm. The second tabula moderna apparently produced by Lorenz Fries for Johannes Grüninger’s 1525 edition of Ptolemy’s Geography. It shows the area between the Arctic, Baltic, Black and Caspian seas known to the ancients as Scythia. See Appendix 3 for the text on the map. (Private collection.)
modernae were taken mostly from Johann Bohm, *Omnium gentium mores, leges et ritus*. . . (Augsburg, 1520). Fifteen of the woodcuts from Waldseemüller’s *Itinerario*, which Grüninger and Fries were preparing for print, were also added to the versos of some of the tabulae. Only the two world maps lacked texts on the verso. Fries added three new tabulae modernae, providing them with his own text. None of the 50 maps was numbered. The atlas was ready by 30 March 1522. The key point in all this is that Grüninger at one time must have had 50 manuscript worksheets.

The 1522 Ptolemy edition was heavily criticized by some professionals, but it was a commercial success. When Fries started working on the 1525 edition in early 1524 the only areas to have escaped modern mapping were large parts of the western hemisphere and European Russia with its lands east of the Volga and north of Scythia. Precisely between the printing of the 1522 and the 1525 Geographies, data became available to fill the gaps. First, the remnants of Ferdinand Magellan’s expedition returned to Spain in September 1522, having circumnavigated the world, and the first printed account of the voyage, by Maximilianus Transylvanus, was published in Cologne in February 1523. Then, in April 1524, the second and third letter (cartas de relacion) of Hernán Cortés, reporting the discovery of inland Mexico and the conquest of Tenochtitlan were published in Latin in Germany. This edition contained a map of the Gulf of Mexico and a plan of the city of Tenochtitlan (Mexico City). With the printing of Peter Martyr’s first three Decades, these publications, provided the bulk of the information on South America, Mexico and the Pacific needed for a map like the *Tabula Moderna Alterius Hemisphaerii*, the map of the Pacific with which we are concerned.

Information for the Tartary tabula reached Fries in a different way. His main source in this case was Waldseemüller’s wall map of the world, the *Carta Marina* of 1516, on which Fries was working to produce a reduced version for Grüninger. He must also have had a copy of the recently published (1524) booklet describing Ambrosius Contarini’s journey through Poland, Russia and Circassia to Persia. All this new information created an opportunity for adding the maps needed to complete the geographical coverage of the world, one map showing more of the New World and the great

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**Fig. 3. Outline of the tabulae modernae produced in Strasbourg in the first quarter of the sixteenth century for the various editions of Ptolemy’s Geography.** Pecked lines indicate new maps in the 1513 edition, dotted lines those created for the 1522 edition, and the bold continuous lines the two manuscript maps intended for the 1525 edition. The outlines are superimposed on Lorenz Fries’s map of the world in the 1522 edition, here cut, however, and re-arranged to show the Pacific Ocean as a whole, with Asia on the left instead of the right. From this diagram we see how, had the two *new tabulae modernae* (the Pacific *tabula* with its representation of the west coast of South, Central and part of North America, and the Tartary *tabula* showing the lands east of European Russia) been included in Johannes Grüninger’s 1525 edition of the Geography, they would have completed the modern coverage of Africa, Asia and the Americas. (Author’s drawing.)
ocean to its west, and the other portraying Russia and Tartaria (Fig. 3).

The Two New Manuscript Maps
Neither of the two newly discovered manuscript maps is dated or signed. The handwriting is probably secretarial but not attributable; it is certainly not that of Lorenz Fries. No contemporary reference specifically naming either map is known. However, in the correspondence between Johann Grüninger the publisher, Hans Koberger the financier, and Willibald Pirckheimer the translator of the Ptolemy text, who were all involved in the preparation of the 1525 edition of the Geography, the ‘new maps’ are referred to in various ways, as shown below.

In February 1524 Grüninger wrote to Koberger that he had approached various scholars to assist him in producing a new edition of his 1522 Ptolemy. He went on to say ‘Also Dr [Lorenz] Fries will gladly help, he likes me [and he] confirms the Ptolemy [of 1522] is not well produced’. In the same letter Grüninger states that he was working on Waldseemüller’s heritage: ‘I wrote you about the Itineraria, the Cronica Mundi book [and] the Mapa and Carta Marina. By the end of May, Grüninger had received the manuscript of Pirckheimer’s translation of Ptolemy’s eight books and was requesting him to correct the text for the verso of the tabulae antiquae on separate slips of paper ‘because I cannot do it and have to ask Dr Fries to do it, something I do not like to ask him … I hope [your corrections] will be to his liking.’

Late in November 1524 Grüninger told Pirckheimer that, while still waiting for the corrections, he had started printing the maps. On 26 February 1525 Grüninger asked Koberger for ‘7 Florins for [the printing of] the two Cartha [chart] and mapa [map].’ That these refer to the Pacific Ocean chart and the Tartary map that Fries had designed may be assumed from Grüninger’s earlier practice of making a distinction between them.

Neither of the two manuscript tabulae modernae that have come to light matches any known printed map. There is much, however, to suggest they were made for the 1525 Geography. The layout and style of the two maps correspond to that of the three tabulae modernae made by Fries for the previous edition (1522). Both manuscript maps are on the trapezoidal, or Donis, projection favoured by Fries and their dimensions are the same. On each, the title is given in a banderole at the top of the map like other maps re-designed or made by Fries for the 1522 Ptolemy. The draft tabulae are stylistically like Fries’s tabulae modernae: the signs for mountains, cities and other geographical elements are done in the same way, and the lettering and form of the numbers match (five is written as a 5, not a 4 as in Waldseemüller’s maps and other maps produced before about 1520).

The text on the back of each map is framed on either side by a broad margin for the decorative motifs characteristic of Fries’s other printed versos, such as those in the 1522 and 1525 Geographies, and a space has been left at the start of the writing for the historiated initial (Figs. 4 and 5). The syntax is remarkably similar to that of texts composed under Fries’s responsibility for the tabulae modernae of America and China, suggesting he was responsible for the two new texts as well. Only one feature does not match Fries’s usual practice. Whereas the sea on his woodcut tabulae modernae is blank, with a hatched coastline, the sea on the manuscript maps is neatly pecked, a style common in copperplate engravings and early Italian maps. There is no obvious explanation for this here, unless Fries had used an Italian scribe to prepare the fair copy of the map.

Physical Characteristics
Both maps were at some time bound into the same book, as is indicated by the central vertical strip of glue stain, the matching paper damage along the outer edges, and the damp stains. Heavy thumbing at the lower-right corner of the Tartary map (masked on the Pacific Ocean map by water staining) suggests intensive use over a long period of time while still in a book. The marked difference in overall condition suggest that the maps also had a lengthy later life separately.

Each map occupies a centrally folded double folio measuring 40.5 × 54 cm (16 × 21 in). The watermarks are identical, a glove with cuff (together c.85 × 24 mm) with a six-pointed flower, or star, above the third finger. The distance between the chain lines is also the same on both maps: 25 mm (Plate 1). Similar watermarks are ascribed to a range of dates between 1516 and 1544. Radiocarbon dating of the paper used for the Pacific tabula suggests that the plant fibres grew either between 1451 and 1528 or between 1551 and 1634 (Plate 2).

Watermark and radiocarbon dating thus combine to give a range for the manufacture of the paper between 1516, the earliest date of the watermarks, and 1528, the last date of the first part of carbon dating (see Plate 2).

Both the maps and their texts are in the same hand throughout, showing only the inevitable...
Fig. 4. The text on the verso of the Tabula Moderna Alterius Hemisphaerii (see Fig. 1). Space has been left for a historiated initial letter F (for Ferdinandus Magellanus). Note the underlining. See Appendix 1 for transcription and translation. (Private collection.)
Fig. 5. The text on the verso of the Tab[ul]a Med[erna] Tartarie (see Fig. 2). Note the underlining. The decorative initial was to be an A (for Ambrosius Contarinus). The original sheet number 41 (bottom of the right-hand sheet) has been replaced by 27. See Appendix 3 for transcription and translation. (Private collection.)
irregularities brought about by the reloading of a quill pen with ink. The text on the verso of each map contains underlining in three places. The original number, 41, in the lower-right corner of the Tartary map, has been replaced by 27.

The ink on maps and texts was examined by X-ray fluorescence (micro XRF) and the individual results compared with each other, with those from the analyses of ink on a letter written by Grüninger on 22 November, 1524, and with a modern iron-gall ink. The conclusion is that both maps were executed with identical ink that is, however, quite distinct from modern iron-gall ink (Plate 3). They also show that the ink used for the underlining of the texts on the back is the same on both maps but differs from that used for the texts themselves. We learned, too, that the ink used to change the map number on the Tartary map to 27 was not the same as that used either for the maps or for the underlining. The ink used by Grüninger in his letter was similar but not identical to that used on the manuscripts.

A final observation on the physical characteristics of the maps is that a stylus or hard point of some sort and a ruler were used to mark out the frame of the map on one side of the sheet and the frame of the text on the other side before inking, thereby also ensuring the exact positioning of the blocks in the printing press. The oblique meridians were also drawn with the stylus in the same way. Traces of this preparatory work are still discernible where the inking of the grooves was discontinued (Fig. 6).

Tabula moderna Alterius Hemisphaerii

The map of the 'Other Hemisphere', depicts the world encompassed between latitudes 40° north and 60° south and longitudes 320° east and 180° east, with the prime meridian of Cadiz that could not have been shown on a map until news of Cortés’s conquest of Mexico and Magellan’s passage through the straits of Tierra del Fuego and his circumnavigation of the world had reached Europe (see Fig. 6).
The contested Moluccas

The map is on a trapezoidal projection and so arranged as to show those parts of the Western Hemisphere assigned by the Pope to Spain in the Treaty of Tordesillas (7 June 1494). It excludes Portuguese territory. The selection of Cadiz for the prime meridian, 10 degrees east of that of the Canaries, was common among the Spanish explorers after the time of the Treaty. The contested Moluccas (Spice Islands) are placed a few degrees within the Spanish area of dominance.

The text on the back of the map has been laid out to form two pages when the map was folded for binding (Appendix 1). Thus, the start of the text with its historiated initial letter is seen first, before the first page of the bifolium is turned to reveal the map, while the conclusion is found on the fourth page, the verso of the right-hand side of the map (see Fig. 3). It is a summary of the first printed account of Magellan’s celebrated voyage into the Pacific as reported by Maximilianus Transylvanus. Although the decoration is missing from the compartment ruled for it by the scribe, a minuscule F tells the printer to insert a block with a historiated F for the first word of the text, the name Ferdinand. In the bottom-right corner, below the last line on the page, the number 51 indicates the map’s intended place in a volume or atlas.

A corrector, possibly the German humanist Johannes Huttich, who had a better command of Latin than Fries, has underlined the text in three places. Comparison with the wording of Fries’s source (Transylvanus’s letter) shows why the corrector was dissatisfied. For example, the first underlining occurs below the words est n. (= enim) latitudinem duorum, trium et cinque usque in decem milliarum (see Fig. 3). Transylvanus, however, had written: Erat fretum hoc, quod quidem tunc (sic) fretum esse ignorabant latitudes aliquando trium, aliquando duorum nonnumque decem, aut quinque milliarum italicorum. And at the bottom of the first page of text Fries had written fretum ipse cui longitude miliarior centum Hispanox fertur where Transylvanus, in describing the length of the channel the explorers had just left, had longitutinem freti miliarium Hispanorum sere centum esse attestavit. Fries apparently had missed the distinction Transylvanus had made between Italian and Spanish miles, and the corrector wanted him to be explicit and clear.

Toponymy on the Alterius Hemisphaerii Map

For the dating of the two manuscript maps, the origin of place-names has proved particularly useful (Appendix 2). Because their appearance suggested the maps might have been intended for the 1525 edition of the Geography, the year 1525 was taken as the hypothesized date. It would be an encouraging pointer were all names on the maps to have come from sources known to have been available to the mapmaker before that year, but that alone would be insufficient evidence to date a map. If, on the other hand, even a single name is identified that could not have been known until after the hypothetical date, that would indicate a definite terminus post quem for the map’s compilation. Names that occur both before and after the hypothetical date are not helpful in dating a map.

Analysis of the place-names on the Pacific tabula reveals that 55 out of the 64 toponyms come from identifiable sources available to Fries before 1525. Of the nine names with no obvious pre-1525 source, two are incomplete or illegible (Jhins and i.ra). Two (costa vadona and val ombrosa) are found on a later map, Vesconte di Maggiolo’s manuscript planisphere of 1527. It is improbable, however, that this Italian manuscript map would have been the source for Fries; it is much more probable that Fries and Maggiolo made use of the same unknown source. The same applies to Cocomello which is found on Pineda’s manuscript map but not in any printed source Fries could have consulted. Two more names, Fretu Magellani and Terra Vespuccii, have no obvious source before 1525 and would appear to have been made up by Fries. For the remaining two names, P.Olmo and Usaicara, no source has been found.

In short, for none of the nine names for which no source before 1525 has been found can it be said that these names necessarily had their origin after 1525. This in turn means we can be satisfied that the hypothesized date of 1525 for the tabula holds. Twenty-nine of the names on the Pacific tabula were used for the first time on a map. Nine of these 29 names have not been found on any map produced after 1525, which confirms that the manuscript map was never printed and had soon disappeared from sight.

Tabula Moderna Tartarie

The title of the second manuscript map, Tartaria or Tartary, goes back to the late medieval period when it was used to indicate the seemingly limitless steppe lands beyond Europe that stretch eastwards from southern Russia and that were inhabited by little-known peoples always threatening invasion. Greek and Roman geographers knew the area as Sarmatia (asiatica) and Scythia. Ptolemy’s seas, rivers,
mountains, tribes and regions were represented in the maps associated with the Geography on Tabula Asiae II (between 64 and 85 degrees east) and on Tabula Asiae VII (between 85 and 140 degrees east).

By the time that Grüninger started working in the 1520s on his new editions of the Geography, no tabula moderna covered the regions beyond the Dnieper River. Medieval literature on Tartary included the two travel reports of the Franciscan monk Giovanni da Pian del Carpine (c.1182–1252), papal delegate to the Great Khan of the Mongols in Karakorum in 1245–1247, and the account of the Flemish Franciscan monk William of Rubruck (c.1220–c.1293) of his missionary travels in 1253–1255 to the same region. These popular works were circulating widely in manuscript in the first quarter of the sixteenth century. Waldseemüller had referred to both authors in preparing his large world maps of 1507 and 1516, adding also a tabula moderna of eastern Europe (Sarmatia Europae: Hungria; Polonia; Russia) that covered the area as far east as the Vistula River to his 1513 edition of the Geography.

Another strand in the mapping of Russia had started with the map of Sarmatia Europae (essentially the German lands and all between the Rhine and Dnieper rivers) included in the 1508 Rome edition of the Geography. The map’s author was the Italian cosmographer Marco Beneventano (1465–1524). This entirely new map of the eastern parts of Europe was based on firsthand knowledge procured by the Polish mapmaker Bernard Wapowski when resident in Rome and on new information in eastern Europe and Russia from the Italian humanist Paolo Giovio and the Cracow humanist and mapmaker Matthias de Miechów.38 Giovio (1483–1552) recorded what he had heard in 1525 from a Russian delegation to the papal court about the area in a book published two years later.39 His map, Moschoriae tabula ex relatione Demetrii legati descripta (woodcut, 46.5 × 33 cm), had already been published, in Rome or Venice, but not before October 1525. It was based on data provided by the head of the Russian legation, Dmitrij Gerasimov (c.1465–after 1535) and gives a reasonable image of Russia between the Baltic Sea and the Volga River and from the White Sea to the Black Sea.40 Miechów’s description of Sarmatia, the region north of the Black Sea, was published in his Tractatus de duabus Sarmattis (1518).

Thus, when Fries started working on the Grüninger editions of the Ptolemy he had to hand Waldseemüller’s 1516 Carta Marina, Beneventano’s 1508 Geography, and Waldseemüller’s modern map of eastern Europe (1513). He also had the second edition of Ambrosio Contarini’s journal of his journey through Russia to Persia, printed in 1524.41

The Tartary Tabula

Despite its rectangular frame, the Tartary tabula is also on a trapezoidal projection, as indicated by the lines of longitude, which extend to almost 60 degrees at the bottom of the map and 110 degrees at the top (see Fig. 2). It shows Russia between latitudes 50° north just under Mare Bachan and the Oceanus Septentrionalis at about 75° north.

The map drew heavily on Waldseemüller’s Carta Marina, a map Fries knew well. The incorrect depiction of the rivers and lakes confirms that the compiler did not know Gerasimov’s woodcut map of Russia, which would have told him that, for instance, the Oka River links the Moskva River with the Volga network. Nor does any detail on the Tartary map derive from Miechów’s Tractatus de duabus Sarmattis, otherwise we might expect at least some of its characteristics to have been included on the Tartary tabula, such as the name Mare Caspium, the more modern Don flavius instead of the Ptolemaic Tanais fl., and the Tartar name Edel flavius in addition to volga fl alias Rha.

The text on the verso of the map is partly based on the journal of Ambrogio Contarini, Venice’s legate to the court of Uzun Hasan at Tabriz, Persia, between 1474 and 1477, who had travelled to Persia by way of Poland, Russia and the Caucasus in order to avoid Venice’s enemies in the Mediterranean (Appendix 3).42 Other sources were also used, notably the classical writers Pomponius Mela and Gaius Julius Solinus. As with other of Fries’s compositions for the backs of his tabulae modernae, however, the relationship between text and map is only partial. Taken as a whole, the Tartary text is a mixture of loosely related data on the Tartars and Tartary with all the signs of hasty compilation.

As with the Pacific tabula, the Tartary text takes up all the first page but only half of the last page of the folded bifolium. Only on the first page is the writing framed and space set aside for decoration, an a indicating the place for the historiated A of Ambrosius, (see Fig. 4). The text is underlined in three places in ink identical to that used for the corrections on the Pacific tabula. Two of these underlinings are on the first page, line 10 ad flus vistula in and line 13 silva, and one is on the last page, line 13 munc scythas et moderni Tartaros. In
addition, on the first page the original number 41 has been erased and 27 written next to it (see Fig. 6).

The sources for each of the 53 names on the map of Tartary have been identified (Appendix 4). All had appeared in published form before March 1525. The majority came from Waldseemüller’s *Carta Marina* (1516), some from Waldseemüller’s 1507 wall map of the world, and some from the map of *Asia II* in one of the Ulm Ptolemy editions (1482 or 1486). Eleven names are found in the second edition of Contarini’s journal (1524), but one of these also appears in the 1482 Ptolemy and five also occur on the *Carta Marina* of 1516, meaning that at least five and at most eleven names on the Tartary map came from Contarini’s book. Again, analysis of the origin of place-names on the Tartary tabula supplies no reason to think the map was made after 1525.

**Producing the 1525 Edition of the Geography**

The consistency of the evidence from the various analyses described above persuades us that the two newly discovered *tabulae modernae* were made towards the end of 1524 and no later than 26 February 1525, and that the only serious candidate for the mapmaker is Lorenz Fries. Corroboration of the likely date and authorship is provided by a small but significant detail, the correction of the map number of the Tartary tabula from 41 to 27, which can be logically explained in only one way.

The maps in the 1522 Geography had no map numbers. For unknown reasons it was decided to give each map in the 1525 edition a number on the back at the end of the text. Only the two world maps did not get a number as they had no printed text on the back. In that way the printer could avoid an extra round of printing. Fries gave his draft maps numbers and thus must have been working on the Pacific and Tartary tabulae after the decision was made but before the printed maps started to arrive, when he noticed the *Terra Sancta tabula* already had the number 41. A letter from Grüninger to Pirckheimer dated 22 November 1524 confirms the situation. Tired of waiting for Pirckheimer’s text corrections on the outstanding maps, Grüninger wrote ‘I have waited for your comments on the maps and have in the meantime printed the maps.’ A failure of coordination between mapmaker and printer meant that Fries had to alter the position of the Tartary tabula and thus its number. Using a pot of newly made ink, he changed that from 41 to 27 (see Fig. 6).

In the new situation, the Ptolemaic world map was to be moved from its position 27 to the first position, preceding the *tabulae antiquae* already numbered 1 to 26. As the world map was unnumbered, the change would not have disturbed the order of the other *tabulae antiquae*. The Tartary tabula was then able to go into the vacated place as already had the number 41. A letter already (1516), some from Waldseemüller The Tartary keeping their *Imago Mundi* *tabulae modernae* in one of the Ulm Ptolemy editions and *tabulae antiquae* of 1516, meaning that at least five and at most eleven names on the Tartary map came from Contarini’s book. Again, analysis of the origin of place-names on the Tartary tabula supplies no reason to think the map was made after 1525.

**The Question of Authenticity**

Inevitably, the unheralded appearance in the twenty-first century of one, let alone two, sixteenth-century manuscript maps raises eyebrows among map historians and connoisseurs, perhaps even more when they are purported to have been created for a specific publication. From what has been said above, readers may already have been encouraged to accept the pair of draft maps described in this article as genuine. In all our investigations into them the possibility that they could be forgeries was foremost in our minds. Proving authenticity is more difficult than proving fakery: however many arguments might point to authenticity, one objective and conclusive counter argument would be sufficient to confirm doubt. No such argument has been raised or found. On balance, taking all evidence, arguments and counter-arguments together, a case of forgery can be safely excluded.

The three most persuasive characteristics militating against the notion of forgery that emerged from the physical inspection of the artefacts have already been described and need only be summarized at this point. One concerns the ink. Three slightly different inks have been identified, indicating intervals between their mixing: the ink used in the drawing of the cartographic image, the ink used for the underlining in the texts on the back and the ink used for the correction of the Tartary map number from 41 to 27. It is difficult to see how a modern forger could have anticipated the recent
technology for discerning differences in the composition of ink that cannot be seen by the naked eye.\footnote{46}

The second indication of genuineness is the initial misnumbering of the Tartary map and its subsequent correction to 27 as described above. Why would a master forger make such a mistake? After all, there is already a printed map in the 1525 atlas bearing the number 41 (Terra Sancta).

A final argument against forgery is provided by the whiteness of the inkless grooves left by the stylus in the area of heavy thumbing on the Tartary tabula. Had a forger had the sophistication to use a stylus in preparing the drawing on a well-thumbed but otherwise blank piece of sixteenth-century paper, the process of scoring would have pressed the grease of the thumbing into the grooves, with the result that these would appear as dark grey lines. Conversely, dirt from thumb marks resulting from the handling of a page that has already been ruled for writing would not penetrate the scored grooves, leaving them clean. The whiteness of the grooves on the Tartary tabula testifies that they were present before the page started to be thumbed (see Fig. 6).

In addition to the internal evidence, discussion of authenticity also involves critical appraisal of the content on the map in question and its appropriateness for the postulated date of the cartographical image. In this connection, the author did receive some sharply critical feedback after presenting the provisional outcome of his research, the salient aspects of which are summarized here.

The most common comment made was that on the Pacific tabula the outlines of the Americas are too modern, especially on the western side. This can be refuted by a number of points once the map and its postulated maker, Lorenz Fries, are set in context. First, it is unsurprising that Fries, who inherited Waldseemüller’s work, would have known how to draw the Americas in a ‘modern’ way, namely as separate from Asia. Second, parts of the west coasts of both North and South America were known and mapped by the early 1520s. Fries himself was the first to represent the west coast of South America between 42° and 17° South on his Orbis typus universalis, the world map of 1522. The western (southern) coast of Central America had been mapped on Jorge Reinel’s planisphere of c.1519.\footnote{47} As for the rest, Fries must have been guessing.

A second objection to the authenticity of the maps relates to the text on the verso of the Pacific tabula, which seems to suggest that it was written long after the discovery of the Strait of Magellan, also dissolves when the wording is considered in the light of contemporary linguistic practice. The sentence in question refers to Magellan’s discovery of the entrance to the Strait that came to bear his name: fretum quoddam intrarunt, quod fretum Magellani, tanquam eius inventum etiam hodie, appellant. A literal translation could be ‘a strait, which they call Strait of Magellan, even today as it was found by him’. At issue are the words etiam hodie, which can mean, as it often did in sixteenth-century church Latin in referring to events that occurred a long time ago, ‘even today’. However, the phrase can also mean ‘[just like today]’.

It has to be borne in mind that, as already observed, Fries’s first language was German and his Latin was poor.\footnote{48} Before German started to become a unified language, inspired by Martin Luther’s widely disseminated translation of the Bible in 1522, it was spoken and written in a number of different ways. We may accept that Fries’s text would have been initially composed in his variant of German.\footnote{49} Common German words so wie Heute [just like today] or so wie auch Heute [just like today] are easily translated into etiam hodie as demonstrated in another context.\footnote{50}

Finally, space allows one more objection to the interpretation of the two draft maps to be enlarged upon. It is often asked if it would not have been possible for the two new tabulae modernae to have been made (shortly) after the publication of the 1525 Strasbourg edition and simply inserted into a printed copy by its owner. Again, the answer seems to be straightforward in the light of the Tartary map’s having been originally given the number 41, already printed on another map in the same atlas. If you have an atlas and add a map in manuscript you give it a sequential map number, not an already existing one.

The recent discovery of two manuscript maps and their identification as final drafts by Lorenz Fries made not later than 26 February 1525 for Grüninger’s 1525 edition of Ptolemy’s Geography has to be counted as a significant event. The arguments, analyses and interpretations offered here should suffice to identify the maps and their author. No objective and conclusive argument against this identification has emerged, and if no new one comes forward, then the two maps are
among the oldest extant to show all Mexico, the Strait of Magellan, the South American continent, the Pacific Ocean, the Mariana Islands, the Philippines and early modern Russia.

From the start, our approach has been to adhere to the principles of historical analysis and to apply the full methodological spectrum to the cartography. Modern technologies for testing the material basis of the maps have been useful in ratifying the conclusions thus reached, but independently they could not have produced the close dating now achieved. Open and wide-ranging discussion with individuals and academic forums have been a vital element in achieving the identification of the two maps offered in this article.

Acknowledgments: About fifty institutions and individuals in nine countries have helped me over the past seven years with material and advice to conclude the process of identification of both tabulae and in the writing of this article. I am grateful to them all. I would like to specially mention Dr Peter Meurer, who was my first teacher and remains my guide in the history of cartography, and Gregory McIntosh who gave me access to his vast knowledge of the early years of the era of the European discoveries and whose exactness and precision prevented so many errors and mistakes.

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NOTES AND REFERENCES

1. The Vicenza edition of the Geography had no maps. The first printed maps appeared in the 1477 Bologna edition with 26 regional maps. In the 1478 Rome edition the Ptolemaic world map was added making up the 27th edition with 26 regional maps. In the 1478 Rome edition Patrick Gautier Dalché, Woodward (Chicago, University of Chicago Press, 2007), Cartography in the European Renaissance or referred to, let alone described as important. Its condition is not known, as it is believed to have been stolen. The map has never been recognized as such, and in public presentations of the map, the woodblock was walked on to the craftsman together with written specifications for line weights, tones, lettering and so on. It might then have been ‘pasted face-down on the woodblock to guide the cutter’, a process that destroyed it (ibid., 18).

2. All editions between 1475 and 1624 are listed in The Earliest Printed Maps 1472–1500 (London, British Library, 1987), 131.

3. The map was offered for sale by a private coin collector in Latin America in June 2009. He had originally purchased it from one of his scouts, who searched street markets for coins. In public presentations of the map, the question has been raised whether the map could at some point have been stolen. This is highly unlikely: only valuable things get stolen. The map has never been recognized as such, and in public presentations of the map, the woodblock was walked on to the craftsman together with written specifications for line weights, tones, lettering and so on. It might then have been ‘pasted face-down on the woodblock to guide the cutter’, a process that destroyed it (ibid., 18).

4. Fifty-first annual meeting of the Society for the History of Discoveries, Santa Fe, New Mexico, 12–14 November 2010; and Thirty-ninth annual meeting of the Australian and New Zealand Map Society, Sydney, May 2011. See Frederik Muller, ‘Tabula moderna alterius hemisphaerii’, The Globe 72 (2012): 1–75.

5. Sotheby’s sale no. 109774, lot no. 98 Russa Tab[ula] Moderna Tartari. This curious map follows the Ptolemaic tradition in the style of the Fries editions of Ptolemy’s Geography. The map had previously been sold by Doug Adams before 1979 (e-mail Stephen Luck, since 1979 assistant and later successor to Adams, dated 20 February 2012), who was working at the time in Francis Edwards’s bookshop in London, to Mr. Nyegaard of Damms Antiquariat in Oslo (e-mail Cathy Slowther, Sotheby’s, 17 February 2011). It was offered for sale at Sotheby’s on 10 November 2009 (Travel, Atlases, Maps and Natural History, item 98) by a private person whom I cannot identify. I have not been able to reconstruct what happened between the early 1970s and 2009 since those involved are now all deceased.

6. Peter H. Meurer, ‘Eine ungedruckte Tabula moderna Tartariae zum Strassburger Ptolemäus 1525’, Cartographica Helvetica 47 (2013): 37–49.

7. On 26 February 1525 Grüninger requested advance payment from Hans Koberger to cut a new map and chart (Oscar von Hase, Die Koberger, einen Darstellung des Buchhandlerischen Geschäftsbetriebes (Leipzig, 1885; reprinted Amsterdam and Wiesbaden, 1967)). The atlas was ready for sale by 30 March 1525 in at least 500 copies, which meant less than 5 weeks would have been available for the wood cutting, printing and binding of two new maps. At the time of printing religious tensions in Strasbourg were running high, and Fries, who like Grüninger stuck to his Catholic faith in a city conquered by Lutheranism, fled the city on 11 May 1525, only six weeks after the atlas was published. Grüninger remained in Strasbourg, but his annual production of new titles was drastically reduced, from an average of 22 a year between 1522 and 1524 to 8 in 1525.

8. On the process of transferring a final draft to a woodblock, see Arthur Robinson, ‘Mapmaking and map printing: the evolution of a working relationship’, in Five Centuries of Map Printing, ed. David Woodward (Chicago, University of Chicago Press, 1975), 1–23 at 17. Robinson gave the manuscript drawing that went from the cartographer to the printer the alternative term ‘worksheet’, which was the basis of the printed version of the map. The worksheet was passed on to the craftsman together with ‘written specifications for line weights, tones, lettering and so on’. It might then have been ‘pasted face-down on the woodblock to guide the cutter’, a process that destroyed it (ibid., 18).

9. The sketches, final draft and various printed editions of Stumpf’s Germania map are at the Central Library in Zurich, Switzerland. The wood block has also survived and is now in the Historical Museum, Zug, Switzerland (P. H. Meurer, Corpus der älteren Germania-Karten (Alphen aan de Rijn, Canalletto, 2001), 198–204). For William Smith’s drafts, see Catherine Delano-Smith, ‘Signs on printed topographical maps ca. 1470–ca. 1640’, in Woodward, Cartography in the European Renaissance (note 2), 1: 528–90, esp. 534.

10. Johann Grüninger (1482–1531) was one of the most important printers/publishers in Strasbourg in the early 1500s (Usher Chrisman, Lay Culture, Learned Culture: Books and Social Change in Strasbourg 1480–1599 (New Haven, Yale University Press, 1982), table 7). He became especially known for his fine woodcut illustrations (Ritter, Histoire de la Imprimerie Alsacienne (Strasbourg, le Roux, 1955), 90).

11. Charles Schmitt, ‘La charte moderne’, in Woodward, Cartography in the European Renaissance (note 2), 1: 528–90, esp. 534.
October 1522. His letter to the Archbishop of Salzburg had Magellan’s Africa and the Eurasian continents. It concentrated on phorum ab eo quem Ptolemeus posuit for toponymy, but the text quotations come from Lord Moluccis insulis, itemq[ue]; alijs pluribus mira[n]dis . . . (London, H. Stevens, 1888).

Cartha Marina Fries with Fries Imago Mundi . . . (Seville, Cromberger, Martyris Anglimediolanensis opera in 4 volumes. 1511), which contains the annotated facsimile edition, F. A. Lorenzana, annotation of place-names. For quotations from the letters we used the original edition and its map for the identification of place-names. For quotations from the letters we used the original edition and its map for the identification of place-names. For quotations from the letters we used the original edition and its map for the identification of place-names. For quotations from the letters we used the original edition and its map for the identification of place-names.

Itinerario or Cronica natione Italus . . . vir erat procera statura . . .” Grüninger to Koberger, 23 February 1524, in Hase, Die Koberger (see note 7), letter 106.

21. ‘dan ich kanns nit, müsst erst doctor friesen dazü berüffen, das ich nit gern tw, ich hoff ir werden im wohl thon’. Grüninger to Pirckheimer, 1 June 1524, in Hase, Die Koberger (see note 7), letter 107.

22. ‘ich hab gewart uff ewer antwurt der ziffer und hab die weil taften getrakten’. Grüninger to Pirckheimer, 22 November 1524, in Hase, Die Koberger (see note 7), letter 114.

23. ‘nun will ich 7 fl nach Lon und die 2 Cartha und Mapa’. Grüninger to Koberger, 26 February 1525, in Hase, Die Koberger (see note 7), letter 116.

24. It is known that Fries had a set of initials designed and cut especially for his editions of the Geography. See François Ritter, Histoire de l’Imprimerie Alsacienne (Strasbourg, le Roux, 1955), 98.

25. The text on the Pacific tabula begins ‘Ferdinandus Magellanes vir suis temporibus . . . singularis audacie . . .’ On the Tartary tabula it begins with ‘Ambrosius Contarinius vir apud Venetos sume autoritatis . . .’. For the 1522 Geography edition, for which Fries was responsible for the texts on the versos of the printed tabulae modernae, the tabula of the Atlantic Ocean and America, Tabula Terrae novaie, opened with ‘Cristophorus Columbus natione Italus . . . vir erat procera statura . . .’. And that of China,Tabula Superiores Indiae, commences with ‘Marcus polus venetus asserit quid inter omnes imperatores . . .’

26. The watermark was compared with examples in In Briquet we found no watermark designs close. In Briquet we found no watermark designs close. In Briquet we found no watermark designs close. In Briquet we found no watermark designs close. In Briquet we found no watermark designs close. In Briquet we found no watermark designs close.

with Fries’s explanatory booklet Uelegung der mercarthen oder Cartha Marina containing an original piece of cartography by Fries—a modern map of West Africa, Tabula prima navigatio-nis Aloesii Cadamosti—and his reworking of Waldseemüller’s written description of the world, the Itinerario or Cronica Mondi. The last was never published, but some of the wood-cuts prepared for it were used as illustrations on the versos of various maps in the 1522 edition of the Geography.

12. Fries’s name as a mapmaker first appears (as L F) on Peter Apian’s world map of 1520, a much reduced version of Waldseemüller’s 1507 wall map of the world. At the same time he was working on a new edition of Waldseemüller’s last (1520) edition of the Geography. Leo Bagrow commented, ‘Alle seine Arbeiten sind nichts weiter als Neuautgaben der Werke Waldseemüllers . . .’ [All his [Fries’s] work is nothing more than new editions of Waldseemüller’s work] (in Acta cartographica 27 (1981): 69), Chet Van Duzer and Benoît Larger, ‘Martin Waldseemüller’s death date’, Imago Mundi 63:2 (2011): 217–19.

13. The later editions of his 1525 Uelegung (see note 11) were not updated but re-issued with just a change of date and title: Uelegung der mercarthen oder Cartha Marina (Strasbourg, Johann Grüninger, 1527), and Underweisung und uelleganze der Cartha Marina oder die mercarte (Strasbourg, Johann Grüninger, 1530).

14. Fries made a modern map of southeast Asia, the Tabula modernae Indiae Orientalis, and one of China, the Tabula superiores Indiae et Tartarieae majoris. He created two maps of the world from Waldseemüller’s Orbis Typus universais (1513). The first, also titled Orbis typus universalis, is a much simplified and smaller world map for which Fries provided a complete grid of 180 degrees latitude and 360 degrees longitude, making it a complete world map. He added a west coast for South America and signed the map ‘1522, L.F.’ This signed map is considered the third new tabula moderna. Fries also made another world map based on Waldseemüller’s, which was placed at the end of the 1522 edition. To distinguish it from the first, Fries labelled it as different from Ptolemy’s: Differt situs orbis hydrogra-phorum ab eo quem Ptolemeus possuit. It concentrated on Africa and the Eurasian continents.

15. Transylvaniaus, a young secretary to the Spanish Emperor Charles V, was present when the survivors of Magellan’s voyage reported to the emperor in Valladolid in October 1522. His letter to the Archbishop of Salzburg had been immediately printed as Maximilianus Transylvaniaus, De Moluccis insulis, itemq[ue]; alijs pluribus mira[n]dis . . . (Cologne, Eucharil Jurciucorii, 1525). We used the original text of 1523 for toponymy, but the text quotations come from Lord Stanley of Alderley’s English translation, The First Voyage Round the World by Magellem (London, Hakluyt Society, 1874), after that translation had been compared with Henry Stevens, Johann Schönér, Professor of Mathematics at Nuremberg (London, H. Stevens, 1888).

16. Praeclara Ferdinandi Cortesii de Nova mari Oceani Hyppania Narratio Sacratissimo . . . Tertia Fernandi Cortesii praeclarae narratio (Nuremberg, Fridericum Pypus, 1524). We used the original edition and its map for the identification of place-names. For quotations from the letters we used the Spanish version published by F. A. Lorenzana, Historia de la Nueva España (Mexico, 1770) in a modern annotated facsimile edition, F. A. Lorenzana, Historia de Nueva España . . . (Mexico, Secretaria de Hacienda, 1981), in 4 volumes.

17. The three printed editions of the Decades of Peter Martyr to which Fries might have had access are: P Martyris De orbe novo decades (Alcala, Arnaldo Guillermi, 1516), which contains the first three Decades; and P. Martyr, De nuper sub D. Carolo repertis insulis . . . maribus (Basel, Petri, 1521), which includes an extract of the fourth Decade.

18. Ambrogio Contarini, Itinerario del magnifico [et] clarissimo messer Ambrosio Cufarafarin, dignissimo orator della illustissima signoria di Venetia, mufin[dado nel anno 1472 ad Usuncassan re de Persia, chiamado modernamente Sophi: nel qual brevemente se co[n]tien tutte le citta, castelli, ville & lochi posti nelle isinfrascrite puintie, e marii, videlicet (Venice, Francesco Bindoni, Maffeo Pasini, 1524).

We used the copy of this edition in the Bibliothèque nationale de France for the study of the place-names. Grüninger collected printed journals of the voyages of discovery in different languages to publish them in German: ‘Ich hab vil inteneraria (sic), ich mein meinung auch tutsch zu trucken’ [I have many travel accounts that I want to print in German]: Grüninger to Pirckheimer, 26 February 1525, in Hase, Die Koberger (see note 7), letter 117.

19. Few autographs of Lorenz Fries survive. One in the University of Heidelberg Library, in a collection of miscellaneous manuscripts (Sammelhandschrift, Cod. Pal. Germ.736, pp. 65–90), shows that his writing is cursive and unlike the text on the two manuscript tabulae modernae.

20. ‘auch doctor Fries will gern heffeln darzu, ist mir geneigt, sagt selber es sy kein rechter ptolemeus (sic) gedruckt . . .’ and ‘ich hab uch [Euch] geschriben von den itineraria, dass buch der Cronica mundi, über die Mapa und Charta marina . . .’ Grüninger to Koberger, 23 February 1524, in Hase, Die Koberger (see note 7), letter 106.

21. Grüninger to Pirckheimer, 1 June 1524, in Hase, Die Koberger (see note 7), letter 107.
place, but Germany (Piccard No.159653); 1518 [Vienna] (Piccard No. 156005); 1522, Lisbon (Piccard No. 155688); 1535, Copenhagen (Piccard No. 155733); 1537, Montzon (Piccard No. 155652); and 1544, Ronneburg, Germany (Piccard No. 155689). The closest matches are the 1516 and 1518 watermarks.

27. The two radiocarbon tests produced near-identical results, with the same degree of probability (95%), with a single difference (1531 instead of 1534).

28. X-ray fluorescence (micro-XRF) tests were carried out on four occasions between 2010 and 2013 in the Bundesamt für Material Forschung in Berlin by Dr Oliver Hahn, chief of the Department of Art and Culture. In the first session, the ink of the Pacific tabula was examined at 20 points on both map and text (Test IV.25-0029 dd 26/08/2010). In the second, the Tartary map was examined, together with a letter written by Grüninger on 22 November 1522 (= Hase letter 114) The test number is 4.25.0041 dd 26/10/2011. The letter was brought to Berlin by a staff member of the Stadts Bibliothek Nuremberg, where the original correspondence of Koberger and Grüninger is held. The third ink examination, on modern iron-gall ink, took place on 14 August 2013 (Test nr. 4.5-0022). The final test, on the ink used in the underlining, was done on 13 October 2013 (Test nr 4.5-0027).

29. The styles of tools that were used from the 12th century onwards to mark out the writing lines on parchment left marks that can look like graphite but are more likely to be metallic lead or silver. The use of graphite is unknown for maps or text before the middle of the 16th century; early references to a ‘pencil’ indicate a fine paint brush. See Christopher de Hamel, Medieval Craftmen: Scribes and Illuminators (London, British Museum Press, 1992), 23. See also Karin Steiner, Paläographie und Handschriftkunde für Germanisten (Berlin, Walter de Gruyter, 2014), 120.

30. See, for example, Transylvanus, De Moluccis insulis (note 15), sig. A(8) verso, ‘Longitundine vero ad Gadibus per occidente 158 [grados] arbitrabatur’ [They judged the real longitude to be 158 (degrees) to the west of Cadiz].

31. The argument over the Spice Islands, a major issue between Spain and Portugal in the late 1520s, was brought to a close in 1529 when Spain leased its rights over the islands to Portugal in the Treaty of Zaragoza.

32. Transylvanus, De Moluccis insulis (see note 15).

33. In a letter to Koberger, Grüninger referred to Johann Huttich as the corrector (Hase, Die Koberger (see note 7), letter 113, 18 October 1524).

34. Transylvanus, De Moluccis insulis (see note 15), sig. A(8).

35. Vesconte di Maggiolo included in his planisphere information from the 1523–1524 voyage of Verazzano along the east coast of North America: see Henry Harrisse, The Discovery of North America (Paris, Welter, 1892), 553, map 17.

36. Fries knew from Grüninger’s printing of Vespucci’s letter that Vespucci had reached 49° south on his third voyage along the eastern coast of South America. Moreover, Fries was working on Transylvanus’s account of the discovery of the Straits by Magellan at that time, so to find the Straits called after its discoverer is no great surprise.

37. The 9 place-names that are not repeated on later maps are Puerto Olino (no known source); Uaicaara (no known source); Taia et Maia, Quiriqetana, Coquera and Caramanensis (from Peter Martyr’s De orbe novo decades (see note 17)); Terra Vespucii; Isolje and dlbns (no known source).

38. Matthias de Miechow (Maciej Miechowita), Tractatus de duabus Sarmatiis Asiana et Europiana (Cracow, 1517; Augsburg, 1518).

39. Paolo Giovio Novocomensis, Libellus de legatione Basilli maghi Principis Moschoviæ ad Clementem VII (Basel, 1527).

40. For a description of the only known copy of the ‘oldest modern map of Russia’, see Peter H. Meurer, ‘Die vermutliche Originalausgabe der Moschoviæ Tabula von Dimitrij Gerasimow und Paolo Giovio’, Cartographia Hungarica, no. 3 (1993): 13–24. The map was sold through Sotheby’s, London, on 7 December 1993 as lot 256, but has not been seen since then. Leo Bagrow, in Imago Mundi 16 (1962): 39–40, alluded to this map without having seen it.

41. Contarini, Itinerario del magnifico (see note 18).

42. Ibid.

43. See note 18.

44. The Ptolemaic world map had been bound in as the first of the tabulae antiquae in several copies of the 1522 edition, for example in the copy held at the University Library of Cologne where the bookblock is in its original, unchanged, condition.

45. I have seen four or five examples of this world map with the number 50 printed on the lower right-hand corner of the map while the back remained unprinted.

46. Any supposed forger must thus have worked between 1903 and 1979. The main source of the Tartary tabula is Waldseemüller’s Carta Marina (1516), which was found and published only in 1903 by Joseph Fischer. The Tartary tabula was sold in the 1970s, that is before 1979 (see also note 5).

47. Jorge Reinel with the help of Pedro Reinel, no title, no date, unsigned, planisphere of the world; manuscript on vellum; 63 ×128 cm (Armando Cortesão, Portugáliae monumanta cartográfica (Coimbra and Lisbon, 1960), 1: 37–38, plate 12; Ivan Kupčík, Münchner Portolankarten (Munich, Deutscher Kunstverlag, 2000), 41–48, Kunstmann IV.

48. Karrow, Mapmakers of the Sixteenth Century (see note 11), 194: ‘The [1522 Ptolemy] edition suffered, however, from a great many textual errors—Fries’s Latin seems to have been shaky . . .’

49. Luther wrote: ‘I have so far read no book or letter in which the German language is properly handled’. Quoted in Philip Schaff, History of the Christian Church, 7 vols. (New York, C. Scribner’s Sons, 1882–1910), 6: 6.

50. For example, a secular text in which an event that had occurred earlier in 1298, was being recalled in December of that same year with the words etiam hodie. See Philipp Jafé, Monumenta Germaniae Historica, vol. 17: Scriptorium (Hannover, 1861), p. 418, 1.37, and p.419, ll.17–32. This printed source is available on-line at http://www.geschichtsquellen.de/repOpus_02033.html?pers_PND=PN010940323 (accessed 5 February 2016).
Appendix 1. Text on the Tabula Moderna Alterius Hemisphaerii [Modern map of the other hemisphere].

Text on the map:

Sinus Sancti Iuliani: uastus et uadosus est / The bay of Saint Julian, it is big and shallow.

nemus desertum / an uninhabited forest.

Magellanus ex hispania hac iter habuit mense maio, quo hiems aspera uigebat / Magellan arrived here in the month of May from Spain, and a terrible winter raged there.

Magellanus mense nouembris habuit hic noctem horarum quinque / In November, Magellan here experienced a night lasting five hours.

SOLOL: ins<ula> circuitu mil<liariorum> 3000. ap<ud> quam magnus e<st> prouentus camphore, zinziberis et cinamomi / SOLOL is an island with a circumference of 3000 miles. On it there is a great yield of camphor, ginger and cinnamon.

[Solol] Habitores harum insularum caphre sunt. Adorant solem et lunam tanquam deos marem et feminam et stellas parentes eorum assurant: amant pacem nulla apud eos latrocinia / The inhabitants of these islands are heathen: they venerate the sun and the moon as their male and female gods, and assert that the stars are their parents. They are lovers of peace and there are no cases of robbery among them.

PORNE [= Borneo]: ins<ul>a in qua est ciuitas habens XXti [viginti] mille domos ac margaritas et uniones magnitidinis ouorum turturum et galinarum / Borneo is an island on which there is a city consisting of 20,000 houses and having pearls (margaritas) and large pearls (unions) having the size of the eggs of turtle doves and hens.

MOABAR regio Indie orientalis . gens idolatra habens margaritas Cattigara sinarum statio / Moabar is a region in Eastern India [Indo-China]; there is a heathen population having pearls; Cattigara, an outpost of the Chinese [the Mekong Delta port Banteaymeas [now Hà Tiên]], not far from Oc Eo.

GIAVE MAIORIS PARS: ubi multa aromatum genera / Greater Java, in part, where many kinds of spices grow.

Text on the back of the map:

Ferdinandus Magellanus, vir suis temporibus in Hispania singularis audaciae, anno salutifere incarnationis .1519., mense Augusti, Caesaris Imperatoris Hispaniarumque regis auspiciis, cum quinque navibus per meridiem inde in occidentem navigans, perque inferius hemisphoerium ad eos orientis terminos pervenit / Ferdinandus Magellan, an exceptionally brave man in his day in Spain, sailed with five ships in August 1519, under the patronage of the Emperor and at the same time King of Spain [Charles V], to the South, after that to the West. Through the lower hemisphere he reached that far end of the East which is accorded 180 degrees by classical authors and which is described as the beginning of the East <by them>.

Fuit enim prima eius navigatio ex Hispali ad Hesperides, inde ad sinum quendam cui ’Sancti Iuliani’ nomen inditum est illius Continentis quem ’Mundum novum’ sive ’Terram Sancte Crucis’ inventores appellavere, ubi polum antarcticum quadranginta novem gradibus elementum elevatum habeabant, longitudinem vero a Fortunatis in occidentem gradibus sex supra quinquaginta hue usque traditore. Iuxta hæc litora gigantes multis, quos appellant ’Indos’, conspexerunt et deserta nemora. Cunque terræ hæc australis in occidentem tum in orientem et meridiem vergeretur et mense Maio hiems atrox viget, illius continentis litora abradentes post promontorium cui ’Sanctae Crucis’ nomen inditum est, fretum quoddam intrarunt, quod ’fretum Magellani’, tanquam eius ipsum ascribitur.

Est enim latitudinis duorum, trium et quinque, usque in decem milliariorum. Hic polus antarcticus quinquaginta duobus gradibus supra orizontem elevatus conspiciebatur, terram autem quae fretum ipsum conficiebat.
a sinistro latere insulas arbitrabantur. Et licet mortales nullos conspexerint, ignium tamen multitudo visa est. Hic mense novembris noctem horarum quinque habuerunt, euasque fretum ipsum, cuius longitudo milliariorum centum hispanorum fertur, in aliiu uastum mare et amplum inciderunt. Et post navigationem quadraginta dierum duas insulas compere sub tropico Capricorni, quas ‘Infortunatas’ denominarunt, eo quod desertae sint. Rursum per trimestre nauigantes per illud ingens pelagus ita ut aequinoctialem uersus arcticum iam transcendissent, in arcī [= Arcti] pelagus deuenerunt, ubi Imuaganam, Selam, Acacam, Massanam, Subuth, Mauthan, Boel, Gibet, et multas alias tum fertiles tum inhabitas et prius nunquam uisus inuenere insulas. Hic enim arcticus undecim gradibus elevatus cernebatur.

Its breadth is two, three, five or even ten miles. Here the southern Polar Star was seen elevated at 52 degrees over the horizon, whereas they thought that the land bordering the Strait on the left consisted of islands. And although they did not see any living person at all, a great number of fires was nevertheless observed. Here they had a night lasting five hours in the month November. Having passed the Strait itself, which they say had a length of 100 Spanish miles, they came upon another vast and great sea. And after a sailing voyage lasting forty days they found two islands on the Tropic of Capricorn, which they called the ‘Infortunate ones’, as they were uninhabited. After again three months of crossing this overwhelming sea, in such a way [= direction] that they had already passed the Equator towards the North, they reached the sea in the North, where they found Imuaganam, Selam, Acacam, Massanam, Subuth, Mauthan, Boel, Gibet, and many other islands both fertile and uninhabited and previously never seen. Here the Great and Little Bear were seen elevated at 11 degrees.

In his Magellanus ipse vita functus est. Seranus quoque ei suffectus in vinculis misere obiit. Post has duae immensae insulæ, quarum altera Porne, altera autem Solol ambitus milliariorum trium millium, invente sunt. Et quanto haec maior, tanto est illa beatior. Caphrae enim omnes sunt insulani, id est gentiles. Solem et lunam deos colunt, amant pacem et ocium, iusticiaeque et pietati plures adhaerent. Bellum vero maxime detestatur. Et si ritus eorum diligentius inquirere velis, Maximilianus Transiluani Caesaris a secretis epistolam vide. Molucae tandem insulae quinque sub ipso aequinoctiali compersae sunt, quarum prima Thedori dicitur, inde Tharante, Mathien, Muthil et Mare, parvae admodum, sed hariophili, cinnamomi ac nucis miristicae fertiles. Has enim non procul a Cattigara oppido Sinarum distare credunt, quod est in oriente nostri hemisphærii. Illarum nanque mores et instituta ac navigationis successum idem Transylvanus optime enarrat.

On these islands Magellan lost his life. Seranus also, his second-in-command, died unhappily in fetters. Behind these, two big islands were found, of which one is Borneo, the other Solol with a circumference of 3,000 miles. And by as much as the latter one is greater, so much is the former one more beautiful. All inhabitants are ‘caphrae’, that is heathens. They venerate the sun and the moon as gods, they love peace and leisure, and they are very much in favour of justice and piety, whilst they detest war very much. And if one wishes to know more about their rites, let him consult the letter by Maximilianus Transylvanus, the Emperor’s secretary. The Molucaes, five islands right on the Equator, were finally found, of which the first is called Thedori, and after that Tharante; Mathien; Muthil and Mare, rather small, but fertile for clove, cinnamon and nutmeg nut. It is believed that they are not far removed from Cattigara an outpost of the Chinese which is situated at the eastern end of our hemisphere. The same Transylvanus describes their customs and institutions and the further voyage very well.
Appendix 2. Toponomy on the *Tabula Moderna Alterius Hemisphaerii* with the written works (manuscript and printed) and printed maps that Lorenz Fries could have used for them.

| A: Name on the map | B: Possible source | C: Observations | D: Found on a map before 1525? | E: Found on a map or globe after 1525? |
|--------------------|--------------------|-----------------|-------------------------------|---------------------------------------|
| **I (NORTH AMERICA)** |                    |                 |                               |                                       |
| 1 florida          | Cortés 1524: the map | discovered by Ponce de Leon 1513 | Pineda MS 1519 | used continuously |
| 2 c. de lago       | Waldseemüller 1507/13 | Cantino 1502: C. delago; Waldseemüller 1507 & 1513: C. delago | Wauds. 1507 | Gilt globe c.1526 |
| 3 c. alto (Cabo alto?) | Waldseemüller 1507/13 | Cantino 1502: Waldseemüller 1507 & 1513: Costa alta | Cantino 1502 | Wooden globe c.1535 |
| 4 costa vadosa     | no source found | in English: shallow coast | NO | Magglio MS 1527 |
| 5 vai ombrosa      | no source found | old Spanish, in English: shady valley | NO | Magglio MS, 1527 |
| 6 p. olmo (Puerto Olmo??) | no source found | Elm harbour, with 'typical' large bay | NO | NO |
| 7 MALINATEBEQUE   | Cortés 1524: D2 verso | Malinachebeque: 70 leguas to the coast of the sea | NO | Zorzi MS: Malinatbeq. P |
| 8 TUCHITEBEQUE    | Cortés 1524: D2 verso | Tuchitebeque: 12 leguas from Malinachebeque | NO | Zorzi MS: p Tichatebeq |
| 9 Cuzola           | Cortés 1524: D1 verso | Cuzula: 80 leguas from Temixtitan | NO | Volpeii 1536: Cuzula |

| **II (MEXICO; CENTRAL AMERICA)** |                    |                 |                               |                                       |
| 10 TAMAZULAPA      | Cortés 1524: D2 recto | Tamazulapa: very reasonable people | NO | Zorzi MS: Tamazulapa |
| 11 Tesqua          | Cortés 1524: the map | Tesqua | Cortés 1524 | Zorzi MS: Tesqua c. |
| 12 Tenosilthin     | Cortés 1524: C1 verso | Temixtilhan, also on the 1524 plan of the city | Cortés 1524 | Vopelli 1536 |
| 13 MESSICO (west coast) | Cortés 1524: D6 verso | Messico, note Italian spelling used in the Latin edition | NO | Zorzi MS, Volpeii 1536 |
| 14 CURVITECAL      | Cortés 1524: B4 recto | Cortés: Chufutecal | NO | Zorzi: p curvitcal |
| 15 TASCALTECAL     | Cortés 1524: A5 recto | Tascaltecal | NO | Zorzi MS; Volpeii 1536 |
| 16 CHIENS MOLEN REGIO (east coast) | Cortés 1524: A4 recto | SNIchimalen | NO | Zorzi MS: P snihelmale |
| 17 panuco          | Cortés 1524: A3 verso | Panuco, also on the Cortés map of the Gulf of Mexico as Rio Panuco | Cortés 1524 | used continuously |
| 18 CULUA           | Cortés 1524: C1 verso | Culua & magna Civitas Temicitan | NO | Vopelli 1536 |
| 19 vera croce       | Cortés 1524: A1 verso | Vera Cruces; Cortés Venice 1524: cita vera croce (A1, recto) | NO | used continuously |
| 20 seville         | Cortés 1524: the map | Also in Cortés 1524 text: Civitate Cipual, quam Hispam (+ Sevilla) | Cortés 1524 | Fine 1531; Vopelli 1536 |
| 21 USAICARA        | no source found |                              | NO | NO |
| 22 cimpuil         | Cortés 1524: A1 verso | Provinciam Cipual | NO | Zorzi MS; Volpeii 1536 |

| **III (CARRIBEAN; DARIEN)** |                    |                 |                               |                                       |
|**NO YUCATAN** |                    |                 |                               |                                       |
| 23 Cuba Ins.       | Mártil I.1: 32 | Shape copied from Waldseemüller  Geography 1513/1520 | Martyr map 1511 | used continuously |
| 24 Jamaica          | Mártil I.1: 32 | the voyage of Columbus: yamaia; Enciso 1519: Jamaica, h2 verso | YES | used continuously |
| 25 guanassa         | Mártil I.10: 91 | 130 leguas west of Cuba is an island ... | Martyr map 1511 | used continuously |
| 26 Cocomello        | no printed source found | Pineda MS 1519: Cocomel | Pineda MS 1519 | as COZUMEL |
|   | A: Name on the map | B: Possible source | C: Observations | D: Found on a map before 1525? | E: Found on a map or globe after 1525? |
|---|------------------|------------------|----------------|-------------------------------|----------------------------------|
| 27 | TAIA ET MAIA     | Mártir III:4: 188 | Columbus' fourth voyage (1503/04) | NO                            | NO                              |
| 28 | QUIRIQUETANA     | Mártir III:4: 188 | Columbus' fourth voyage (1503/04) | NO                            | NO                              |
| 29 | BERQUA           | Mártir map, 1511  | Columbus' fourth voyage (1502/04); Enciso 1519, H6 verso: Veragua | Cortés 1524 used continuously   |                                  |
| 30 | COQUERA          | Mártir III:1: 167 | the voyage of Núñez de Balboa (1513): Cacique called Coquera | NO                            | NO                              |
| 31 | CHAPES           | Mártir III:1: 166 | Cacique ... que se llamaba CHAPES | NO as CHAPAS used continuously |                                  |
| 32 | MUNDUS NOVUS     | Vespucci 1504     | first named by Mártir: orbis novus (letter 138, dated 1 Nov 1493) | Ruyssch, 1508 used continuously |                                  |
| 33 | TUMACHUS         | Mártir III: 1: 169 | the voyage of Núñez de Balboa 1513: El cacique que se llamas Tumaco ... | NO as Tumaco used continuously |                                  |
| 34 | REGIONES INCOCNITE | Waldseemüller 1507 | shown in the inset hemispheres of that wall map of the world | Walds. 1507 Yes, until 1529 (Ribeiro) |                                  |
| 35 | URABA            | Martyr map 1511   | also in Enciso 1519, H5 recto | Martyr map 1511 used continuously |                                  |
| 36 | (N) DARIENIS     | Mártir II:9: 151  | also in Enciso 1519, H6 recto: (N) dabayne | Turin MS 1523 YES              |                                  |
| 37 | COIBA            | Mártir III:10 243 | the voyage of Gonzalo de Badajoz, 1515: el reino de este se llama Coiba | NO                              | NO                              |
| 38 | CARAMAIRENSIS    | Mártir II:1: 97   | the voyage of Alonso de Ojeda 1502: la llaman los indigenas Caraimain | NO                              | NO                              |

### IV (SOUTH AMERICA)

**NO BRASIL**

|   | A: Name on the map | B: Possible source | C: Observations | D: Found on a map before 1525? | E: Found on a map or globe after 1525? |
|---|------------------|------------------|----------------|-------------------------------|----------------------------------|
| 39 | sinus Sancti Juliani | M.T. 1523 A4 recto | map starts at 320 degrees longitude, the Spanish hemisphere | Turin MS 1523 used continuously |                                  |
| 40 | S+ (=santa cruz) | M.T. 1523: A7 verso | Sanctae Crucis. Not on Turin MS 1523; not in Pigafetta c.1525 West of Fort. Islands | NO used continuously |                                  |
| 41 | terra gigante     | M.T. 1523 A5 verso | Stanley 191: Gigantes our men could not keep up with these giants ... when running | NO used continuously |                                  |
| 42 | Fretu Magellani (sinus multit) | No source found | Stanley 195: certain inlets were discovered ... had the appearance of a Strait | NO used continuously |                                  |
| 43 | TERRA VESPUICII   | No source found | Turin planisphere (1523): C deseado; Pigafetta MS c.1525: Cap de seade | NO                              | NO                              |
| 44 | I...LE (??)       | No source found | ISOLE. islands? M.T. as quoted by Stanley 197: not mainland, but islands... | NO                              | NO                              |

### V (PACIFIC)

**NO JAPAN**

|   | A: Name on the map | B: Possible source | C: Observations | D: Found on a map before 1525? | E: Found on a map or globe after 1525? |
|---|------------------|------------------|----------------|-------------------------------|----------------------------------|
| 45 | Ins. Infortunata | M.T. 1523: A8 verso | Insulas infortunatas. Pigafetta: Yssole Infortunate | also in Pigafetta used continuously |                                  |
| 46 | Dins?? Dinia?? D ins(jia) ?? | no source found | Brandis Ins?? | NO                              | NO                              |
| 47 | Insanuaga        | M.T. 1523: A8 verso | Insanuaga. uninhabited, 11 degrees north / 158 degrees west of Gabidus (= Cadiz) | also in Pigafetta used continuously |                                  |
| 48 | Selani           | M.T. 1523: B1 recto | Selani. Seen by Magellan but not visited | also in Pigafetta used continuously |                                  |
| 49 | Acaca            | M.T. 1523: B1 recto | (in) Acacan. uninhabited. Acaca = canoa | also in Pigafetta used continuously |                                  |
| 50 | Massan           | M.T. 1523: B1 recto | (ad) Massanam. | also in Pigafetta used continuously |                                  |
| 51 | Subuth           | M.T. 1523: B1 recto | Subuth. Stanley 199: Healing of a boy; 2000 converts in one day. | also in Pigafetta used continuously |                                  |
| 52 | Manthan          | M.T. 1523: B1 verso | Mauhan. Stanley 200: Magellan at last ... S lain. Pigafetta: Matha | also in Pigafetta used continuously |                                  |
| 53 | Boel             | M.T. 1523: B3 recto | Cohol. Pigafetta: Boel | also in Pigafetta used continuously |                                  |
| A: Name on the map | B: Possible source | C: Observations | D: Found on a map before 1525? | E: Found on a map or globe after 1525? |
|--------------------|--------------------|-----------------|-----------------------------|-------------------------------------|
| 54 Gibet            | M.T. 1523: B3, recto | Gibeth. Stanley 202: they found it was rich in gold & ginger. | used continuously | used continuously |
| 55 SOLOL            | M.T. 1523: B4 verso | Solo. Shape literally copied Zangaro from Waldseemüller | NO | Zorzí MS |
| 56 PORNE            | M.T. 1523: B3 recto | Porne (insulam). This is now Borneo | YES | Zorzí MS |
| 57 Gis              | M.T. 1523: B4 verso | (ad insulam) Glonam. Pigafetta: Giolamo. | Reinel MS 1517 | used continuously |
| 58 Insule Moluccen  | M.T. 1523 A3 verso | M.T.: Thamore. Pigafetta: Tarenate | Reinel MS 1517 | used continuously |
|                    |                    | M.T.: Muthil. Pigafetta: Mutri | Reinel MS 1517 | used continuously |
|                    |                    | M.T.: Theodori. Pigafetta: Thadore | Reinel MS 1517 | used continuously |
|                    |                    | M.T.: (no name). Pigafetta: Molina | Reinel MS 1517 | used continuously |
|                    |                    | M.T.: Mathiæ. Pigafetta: Massian | Reinel MS 1517 | used continuously |
| 59 GUAVE MAJORIS PARS | Geography 1522 | also in Marco Polo: Java major | Tab. M. Indiae. | used continuously |
| 60 CINI regio       | Marco Polo         | Geography 1522 | YES | used continuously |
| 61 Mangi provincia  | Geography 1522     | map Dieffert situs orbis: Moabat regio | Dieffert situs orbis | used continuously |
| 62 (SINE) VAR regnum| Geography 1522     | Geography 1522 | Dieffert situs orbis | used continuously |
| 63 Moabara regio    | Geography 1522     | map Dieffert situs orbis: Moabat regio | Dieffert situs orbis | used continuously |
| 64 cattigara        | M.T. 1523: A4 verso | This is Poloemy's Cattigara at 180 degrees east of Tenente | YES | used continuously |

Cantino 1502: Manuscript planisphere on vellum. No title, place or date on the map, but made in 1502 on the orders of Alberto Cantino. Now in the Biblioteca Estense, Modena.

Cortés 1524: Praeclara Ferdinandi Cottesi de Nonu maris Oceani Hypsania Narratio Sacratissimo ... Tertia Ferdinandi Cortesii praecella narratio (see text note 16).

Encisco 1519: Martin Fernandez de Encisco, Suma de geografía (Seville, Cromberger, 1519).

Fine 1531: Oronce Fine, Nova et integra orbis descriptio (Paris, 1531).

Gilt globe: le Globe dorée: Nova et integra universi orbis descriptio. Terrestrial globe in copper gilt. No author, no date. Now in the Bibliothèque nationale de France, Paris. (Harrisse, Discovery of North America (see text note 35), no. 181).

M.T. 1523: Maximilianus Transylvanus, De Molliis insulis (see text note 15).

Maggiolo MS 1527: Manuscript planisphere on vellum. Untitled, signed Vesente de Maiole and dated December 20, 1527. Formerly in Milan, Ambrosian library. Destroyed in the Second World War (see Harrisse, Discovery of North America (text note 35), loose appendix).

Márir I & II & III: Pedro Márir de Angleria, Las Décadas del Nuevo Mundo (Madrid, Ediciones Polífero, 1989); Cartas sobre el Nuevo Mundo (Madrid, Ediciones Polífero, 1990).

Martyr map: Peter Martyr de Anglieria. Woodcut on paper. No title or date but in Martyr, Logatii Babyloniæ Oceani deas (Seville, Cromberger 1511). Map 1 in Philip Burden, The Mapping of North America (Rickmansworth, 1996), vol. 3.

Pigafetta (no date): Antonio Pigafetta, Navigation et descouvrement de la Inde. . . . Manuscript on vellum. Now in the Beinecke Library, Yale University, New Haven, Connecticut.

Fácimilé edition: R. A. Skelton. Magellan's Voyage (New Haven, Yale University Press, 1969).

Pineda MS 1519: Alonso Álvarez de Pineda, manuscript map on paper of the Gulf of México. Dated on the back 1519. Now in the Archivo general de Indias, Seville.

Ruysch 1508: Johannes Ruysch, Universali cogniti orbis tabula, inserted into the edition of Poloemy's Geography printed in Rome by Bernardinus de Vitalibus in 1507 under the title In hoc operae haec contenter Geographia Cl. Phtolemaei . . . .

Stanley: Lord Stanley of Alderley: The First Voyage Round the World by Magellan (London Hakluyt Society, 1874). English translation of Maximilianus Transylvanus, De Molliis insulis. . . . (Cologne, Eucharij Cenucomi, 1523).

Waldseemüller 1507: Universalis cosmographia secundum Polonemae. Map of the world in 12 sheets. Woodcut on paper. 7Strasbourg, 1507. The only surviving copy is in the Library of Congress, Washington.
Appendix 3. Tabula moderna Tartarie, texts.

Text on the map:

In istis montibus reperiunt falcones albi / In these mountains there are white hawks

Ex his regionibus portantur pelles preciosae ad partes occidentales / From these regions valuable furs are brought to the west

fons occidentalis Rha / western source of the Volga

fons orientalis Rha / eastern source of the Volga

Hic dominatur Batoth ex Principibus magni chaam, Princeps de Casana / Batoth, Prince of Kazan, from the House of the Great Khan, reigns here

Hec regio olim Hungaria magna dicta est qui postea in Europam venientes Germaniam inhabitant, nunc Populi isti silvestres sunt, appellanuntque Bastarci sub dominio Tartarorum / This area was once called Great-Hungary. The inhabitants later lived, after they had come to Europe, in Germany. Today’s inhabitants are living in the woods. They are bastards and stand under the rule of the Tartars.

Parositarum genus hominum parvum habens stomacum non n. manducant sed coquunt carnes et super olam ponunt se et fumo et odore reificiunt / The Parosites, people with a small stomach. They do not eat, but they cook meat and lean over the pot and refresh themselves by the steam and the smell.

KANGITARUM REGIO MAGNA, carens aquis, per quam periculosum est, iter facere, olim Scythia citra imaum montem dicta est / Scythia, the great region of the Kangits. It is waterless and dangerous travelling. It was once called Scythia on the mountains.

Text on the back of the map:

Ambrosius Contarinus vir apud Venetos summae auctoritatis anno salutis nostrae 1472 fervescente bello inter Christianos et Othomanorum regem legatus per Republicam Venetam ad Sophi Persarum regem neutra arma sequutus destinatus fuit. Veritusque ob difficilem aditum, ne manus Turcharum incideret, Germaniam ingressus, franfurth civitatem Marchionis Brandeburgensis attigit, quam Viadrus fluvius alluit, qui nunc Odera dicitur, dividit nunc Germaniam a regno Poloniae olim in Sarmatia, quae terminum ad fluvium Vistulam in occidente tamen habebat. Demum Posnaniam, Lomcisiam et Lumberli Poloniae urbes et oppida praeteriens, Russiam ingressus est, sub dominio Cazimir regis Poloniae, sic non tunc nomen ei fuit. In qua Silvae Herciniae solitudines peragrans, vidit Iusch, Aitomir, Beligraoch, Chio, et Cerchas oppida et castra usque ad fluvium Leresse, eorum lingua Danambre, predictam Russiam a Tartaria dividentem.

Ambrogio Contarini, a man of highest reputation in Venice, was elected in the year of our grace 1472—when the war between the Christians and the king of the Ottomans was raging—as a legate by the Republic of Venice to the Suﬁstic king of Persia who was neutral in that war. For fear of the difﬁcult journey there and not to fall into the hands of the Turks, he entered Germany. He reached Frankfurt on the Oder, the town of the Margrave of Brandenburg, which the Viadrus River ﬂows past, today named Oder. It now separates Germany from the kingdom of Poland; this was formerly situated in Sarmatia, which had its western border on the Vistula River. Afterwards passing the Polish towns of Poznän, Łęczyca and Lublin, he entered Russia, which was under the rule of the Polish King Casimir [IV] and therefore not called by that name. There he crossed the wastes of the Hercynian Forest and saw the towns and castles of Lutsk, Zhytomyr, Belgorod Kievsovy, Kiev and Chercasy up to the Dnieper River [Leresse], which is named Danambique in their language and which separates the aforesaid Russia from Tartary.

Tartari nanque harum regionum et qui Sarmatiam Asiaticam incolunt, principem habent Batoth nomine de Casana, genere magni Imperatoris Cham, cuius exercitus ducentorum millium Tartarorum, Saracenorum et Christianorum esse lertur. Qui tempore aestivo per ripas ﬂuviarum Tanais et Rha, nunc Volga, ad Ryphaeos et Hipperboreos Montes reducuntur. Hyemis vero tempore ad Mare Bachtan alias Caspium et Hircanum et ad Paludem Meotim Pontumque Euxinum descendent. Ultra hos Tartaros genus aliud Tartarorum, qui quondam Scytheae dicti sunt, ritui asperiores, ossibus capitum inimicorum in poculis utuntur eorumque cruorem e vulneribus bibunt. Amant nempe proelia, haustu mutui sanguinis foedus percuntur Non ills civitas, domus neque tectum, sed specus incolunt. Habent pecora et armenta pascentia per solitudines incultas. Uxores et filios una in plaustris cariis tectis vehunt. Nullum apud illos scelus furto gravius est. Lacte et mele vivunt spemuntique aurum et argentum tanque libidinis et avariaeæ fomenta. Versus septentrionem montes sunt asperrimi, ad quos extenditur hercinia silva, ubi ingenti deserta ob maxima frigora. In quibus quidem
The Tartars living in those regions and in Sarmatia Asiatica are ruled by the Prince of Kazan with the name Batoth, from the dynasty of the Great Khan, whose army is said to consist of two hundred thousand Tartars, Saracens and Christians. They retreat in summer along the shores of the rivers Don and Volga up to the Riphean and Hyperborean mountains. But they come down in winter to the Caspian Sea, the Sea of Asov and the Black Sea. Among those Tartars is one tribe of Tartars, who were formerly named Scyths and who have rough customs. They use the skulls of their enemies as cups, and they drink blood from their wounds. They certainly love fights, and they confirm a treaty by mutual sucking of blood. They have no town, house and roof, but the live in caves. They have livestock and cattle, grazing in the wild wastes. Wives and sons live in waggons that are covered with skins. No crime is graver among them than theft. They live on milk and honey, and they spurn gold and silver to avoid excess and greed. Towards the north are very rough mountains, up to which extend the Hercynian Mountains. There are enormous deserts because of the immense frost. In the mountains there are griffins, a species of wild beasts, which love and guard in a wondrous way the gold brought from the interior of the earth, and they are hostile to those who will touch it. The first people next of them in the frozen area are the Arimaspi, who are said to have only one eye. There follow the Essedones [Cendones] up to the Sea of Asov and the very lovely Dnieper River, which nurtures big fish of the best flavour and without bones. They say that his entire people were placed and named Magogas after himself by Magog, the son of Japhet. They are now the Scyths and nowadays named Tartars.

Tranato autem flumine Contarinus per campestria Tartariae iter habuit, donec Caffam alias Theodosiam Tauricae Chersonessus, nunc minoris Tartariae emporium attigit, quid reliquum eius Itinerarii contineat. Subsequens edocet tabula.

Having swum through the river, Contarini made his way through the plain of Tartary, until he reached Caffa or Theodosia on the Crimean, today a trading centre of Little Tartary; this is included in the remainder of his itinerary. The following is described in the map.

Appendix 3 (continued)

montibus Gryphi, saevum ferarum genus, aurum terra penitus egestum mire amant mireque custodiunt et attingentibus infensi sunt. Horum primi iuxta frigora Arimaspi, quibus singuli oculi esse dicuntur, ab eis Cendones usque ad Meotida et Boristhenem fluvium amoenissimum, qui magnos alit pisces, quibus optimus sapor et nulla sunt ossa. Eam omnem gentem Magog Japhet filium Magogas a se nominatos primum instituisse ferunt, quos nunc Scythas et moderni Tartaros appellant.

Appendix 3 (continued)
### Appendix 4. Names on the Tabula Moderna Tartarie.

| A: Name on the map | B: Printed source | C: Observations | D: Modern name |
|--------------------|-------------------|-----------------|----------------|
| ecclesia.s.ti|odulphi | Ruyssch 1558: SANCTI ODULFI | Probably confused with Ygura. | Trondheim |
| Urgitschen | W1516: VGRITSCHEIN | ? | ? |
| Benfelch | W1516: Benfelch | Important trade centre north of Novgorod. | Kargopol |
| cargopolis | W1516: Kargopolis | ? | ? |
| Ylant | W1516: YLAND | Uninhabited northern Scandinavia. | ? |
| NORBEGIA DESERTA | W1516: NORBEGIAE DESERTE PARS | Province in Sweden. | Lake Beloye |
| LAPPIA | W1516: LAPPIA | Province in Sweden. | Götaland |
| GOTTIA | W1507: gottia occidentalis | Province in Sweden. | Götaled |
| LIVONIA | W1516: LIVONIA | ? | Livland |
| Lacus albus | W1516: LACVS ALBVS | Separates Sarmatia Europaea from S. Asiatica. | Riphean Mountains |
| RYPHAEI | W1507: Riphel montes | Region in Upland. | Roslagen |
| rodelin | W1516: Rodelin | | |
| flautena | W1516: flautena | Province in Sweden. | Upland |
| virona | W1507: virona | Landscape in Estonia. | Virumas |
| Riga | W1516: Riga | | Riga |
| nabirsch | W1516: Nabirsch | | Bezhetisk (?) |
| PLESCOVIA | W1516: PLESCOVIA REG. | Town and Republic in western Russia. | Pskov |
| CREMANI | W1516: CREMANI | Misplaced from W1516. | Kazan? |
| LITHVANIA | W1516: LITHVANIA D. & MOSCITER | | | 
| RVSSIA ALBA | W1516: RVSSIA ALBA | Town in Western Russia. | Smolensk |
| Smolenzech | W1516: Schmolenzech | | | 
| riesemo | W1515: Smolenzech F1 recto | Town under Muscovite rule (1493). | Vyazma |
| moschovia | W1516: MOSCOVIA REGALIS | Centre of the Muscovite state. | Moscow |
| colonia | W1515: Moschovia D3 verso | Town at the confluence of Moskva and Oka rivers. | Kolomna |
| Resan | W1515: Resan E2 recto | Town east of Moscow. | Ryazan |
| moscus f. | W1516: mosca fl. | | Moskva River |
| Tanais fl. | W1516: Tanais fl. | Confederation of Turkish tribes. | Dón River |
| nagai | W1516: NAGAI | | Nogai |
| Tana | W1516: atana | Mouth of the river Don. | Asov |
| Contarinii 1524: Tina B1r recto | | | |
### Appendix 4 (continued)

| A: Name on the map | B: Printed source | C: Observations | D: Modern name |
|--------------------|-------------------|-----------------|----------------|
| 31 Campestria Tartariae | W1516: CAMPESTRIA TARTARI | the Tartar Plain | |
| 32 Palus Meotis | W1507: Paludes Meotides | Sea of Azov | |
| 33 CIRCHASSIA | Contarini 1524: Cerchassia C4 verso | First time named on a map. | Circassia |

#### B CENTRAL PART:

| 34 OCIEANVS SEPTENTRIONALIS | W1516: OCEANVS SEPTEN. | One-eyed people. | White Sea |
| ARIMASPI | Pomponius Mela, Arimaspi | | Arimaspi |
| 35 MOROVANI | W1516: MOROVANI | Plan del Carpine. Tribe in N. Russia. | Morovani |
| 36 BILERI | W1516: ... Bileri ... | Region: BVLGARIA MAGNA. | i.e. Bulgars? |
| 37 SARMATIA | Ptolemy 1513: Sarmatia | Greco-Roman term for Eastern Europe. | Sarmatia |
| Statia Tartaronum | W1516: Statia Tartaronum | Guard-house of the Tartars‘. | |
| 39 Volga fl. alias Rha | Contarini 1524: Volga E1 verso | | Volga River |
| 40 MITHRIDATIS REGIO | Ptolemy, Asia ii: Mithridatis regio | Mithridates, ruler of Iberia and Armenia. | |
| 41 AMAZONES | Ptolemy, Asia ii: Amasones | Legendary female warriors. | |
| citracam | Contarini 1524: Citracam D2 recto | | Astrakhan |
| 43 Mare Bacham alias Hircanum | Contarini 1524: Mar de Bachan D1 recto | | Caspian Sea |
| caucasis mons | W1516: Caucasis mons | | Caucasus |

#### C EASTERN PART:

| 45 SAMEDORI[um] REGIO | W1516: SAMEDORIVM REGIO | Indigenous nomadic tribes in N. Russia. | Samoyedes |
| 46 MONTES HYPERBOREI | Ptolemy, Asia ii: Montes Hyperborei | Hyperborean Mountains | |
| 47 TARTARIA PER TOTAM | | Great Steppe from the Black Sea to the Pacific. | Tarty in general |
| 48 TARTARIA CVMANIAE | W1516: TARTARIA CVMANIE | Turkish tribes, north of the Caspian Sea. | Cuman Tartary |
| 49 BISREMI | W1516: TERRA BISERMINORVM | Muslim tribes, east of the Kangtis. | Bisemi |
| 50 SCYTHIA | Ptolemy, Scythia | Nomadic tribes from Ukraine to Middle Asia. | Scythia |
| 51 KANIGITARVM REGIO MAGNA | W1516: KANIGITARVM REGIO | Tribes east of the Cumans. | Region of the Kangtis |
| 52 TARTARIA Corasinae | W1516: TARTARIA CORASINE | Regions of Iranian culture east of the Caspian Sea. | also named Sogdiana and Bactria |
| 53 laxartis fl. | Ptolemy, Asia VII: laxarta fluvius | The Syr Darya is an eastern tributary of the Aral Sea. | Syr Darya |
L’atlas de Ptolémée fait par Lorenz Fries à Strasbourg en 1525 était-il complet? Ou bien manquait-il deux cartes?

Deux cartes manuscrites, l’une du Pacifique et l’autre de la Russie/Tartarie, sont apparues depuis 2009. Dans cet article elles sont décrites en détail, placées dans leur contexte, et un argument est avancé pour les identifier comme ayant été faites à Strasbourg pour l’édition de 1525 de la Géographie de Ptolémée et devant figurer dans la section des tabulae modernae de cette édition. Si ces deux cartes avaient été incluses comme prévu, elles seraient venues compléter la cartographie moderne du monde.

¿Estaba completo el atlas de Ptolomeo de Lorenz Friez de Estrasburgo de 1525? ¿O se omitieron dos mapas?

Dos mapas manuscritos, uno del Pacífico y otro de Rusia/Tartaria, han aparecido desde 2009. En este artículo se describen en detalle, se ponen en contexto y se ofrece un argumento para identificarlos como realizados en Estrasburgo para la edición de 1525 de la Geografía de Ptolomeo para la sección tabulae modernae de esa edición. Si se hubieran incluido los dos mapas como se pretendía, habrían completado la cartografía moderna del mundo.
Plate 1. Watermark from the Pacific tabula, a glove with a cuff and a flower or star above the third finger, photographed from the map with the reversed writing of the text on the other side showing through. The measurements on the image are in millimetres. The watermark in the paper of the Tartary tabula is identical. The closest matches are found in Gerhard Piccard, Die Wasserzeichenkartei Piccard im Hauptstaatsarchiv Stuttgart (Stuttgart, Kohlhammer, 1961–1997). (© author.) See page 6.

Plate 2. Graph for the carbon dating of the Pacific tabula. The blue line shows the decreasing concentration of Carbon 14 over time. The 95% degree of probability is indicated by the stippled lines on either side. The horizontal red line shows the concentration of Carbon 14 in the paper of the tabula with a similar degree of certainty. The crossings of the two sets of lines establish the earliest and latest possible dates of the paper used for the Pacific map. The bell curve on the X and Y axis represents the normal distribution of measurements. Leipniz Labor, University of Kiel, Germany. (Courtesy Dr Alexander Dreves, 3 November 2010.) See page 6.

Plate 3. Comparison of the results of X-ray fluorescence analysis of the ink used on the Pacific tabula, the Tartary tabula, a letter written by Johann Grüninger on 22 November 1524, and modern iron-gall ink. The graphs show identical ink was used for both maps; similar ink was used by Grüninger in his letter, and modern iron-gall ink is completely different from all three. Bundesanstalt für Material Forschung, Berlin. (Courtesy Dr Oliver Hahn, 2010–2013, with final report 4 January 2014.) See page 9.