

23 • Centers of Map Publishing in Europe, 1472–1600

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Any attempt to provide the geographical parameters of map publishing from the inception of map printing to the beginning of the seventeenth century must come to terms with data that are fragmentary and disparate. The first, and most crucial, caveat is that our bibliographical control of maps in this period is barely up to the task. The first attempt at a systematic census of sixteenth-century printed maps identified almost eleven hundred titles.¹ The most recent published effort, including an inventory of the maps of a restricted group of sixteenth-century cartographers, lists some two thousand printed maps.² So before attempting to make any generalizations about the centers of map production, it seemed necessary to attempt somehow to build a more substantial body of cartobibliographical data. This effort has been entirely synthetic, based on the accumulation of information from existing published catalogs and cartobibliographies.

SOURCES OF DATA

The source catalogs and cartobibliographies were selected with an eye toward efficiency, that is, toward amassing the largest file practicable while limiting the sources as much as possible. The map descriptions in Karrow were entered in a database against which other sources were compared and to which other data were added. Several other sources were comprehensively surveyed; they were examined, item by item, and entries were made for any maps not already represented in the database. These sources are: Bagrow's typescript list; Koeman's *Atlantes Neerlandici*; the catalog of the Nordenskiöld collection in Helsinki; Meurer's bibliography of atlases published in Cologne; Tooley's list of maps in sixteenth-century Italian atlases; Meurer's *Fontes cartographici Orteliani*; Campbell's *Earliest Printed Maps*; Pastoureau's bibliography of French atlases; and an unpublished typescript catalog of the Newberry Library's Novacco Collection of Italian engraved maps.³ Together, these sources describe more than seven thousand maps and views printed before 1601, for which very basic bibliographical information was abstracted.⁴

The database thus developed has a number of limitations that must be borne in mind. First, except for most of the two thousand maps described in Karrow's *Mapmak-*

ers of the Sixteenth Century, these maps have not been personally examined; instead, the database relies on descriptions made by other researchers. Second, these descriptions naturally exhibit a wide variety in their styles and methods, in their means of characterizing areas shown, in the astuteness with which dates are assigned to undated maps, and in their general accuracy. Third, the

1. Leo Bagrow, "Gedruckte Karten des 16. Jahrhunderts," Berlin, 1933. Xerox copy of typescript in the Newberry Library, Chicago; location of original unknown.

2. Robert W. Karrow, *Mapmakers of the Sixteenth Century and Their Maps: Bio-Bibliographies of the Cartographers of Abraham Ortelius, 1570* (Chicago: For the Newberry Library by Speculum Orbis Press, 1993).

3. Karrow, *Mapmakers of the Sixteenth Century*; Bagrow, "Gedruckte Karten"; C. Koeman, *Atlantes Neerlandici: Bibliography of Terrestrial, Maritime, and Celestial Atlases and Pilot Books, Published in the Netherlands up to 1880*, 6 vols. (Amsterdam: Theatrum Orbis Terrarum, 1967–85); Ann-Mari Mickwitz, Leena Miekkaavaara, and Tuula Rantanen, comps., *The A. E. Nordenskiöld Collection in the Helsinki University Library: Annotated Catalogue of Maps Made up to 1800*, 5 vols., indexes by Cecilia af Froselles-Riska, vols. 5.1 and 5.2 (Helsinki: Helsinki University Library, 1979–95); Peter H. Meurer, *Atlantes Coloniaenses: Die Kölner Schule der Atlaskartographie, 1570–1610* (Bad Neustadt a.d. Saale: Pfaehler, 1988); R. V. Tooley, "Maps in Italian Atlases of the Sixteenth Century, Being a Comparative List of the Italian Maps Issued by Lafreri, Forlani, Duchetti, Bertelli, and Others, Found in Atlases," *Imago Mundi* 3 (1939): 12–47; Peter H. Meurer, *Fontes cartographici Orteliani: Das "Theatrum orbis terrarum" von Abraham Ortelius und seine Kartenquellen* (Weinheim: VCH, Acta Humaniora, 1991); Tony Campbell, *The Earliest Printed Maps, 1472–1500* (London: British Library, 1987); and Mireille Pastoureau, *Les atlas français, XVI^e–XVII^e siècles: Répertoire bibliographique et étude* (Paris: Bibliothèque Nationale, Département des Cartes et Plans, 1984). A new edition of Koeman's *Atlantes Neerlandici* is in progress: Peter van der Krogt, *Koeman's Atlantes Neerlandici* ('t Goy-Houten: HES, 1997–), but at the time of writing the original edition was more comprehensive.

4. The database provides for nineteen pieces of information about each map: (1) date, (2) primary author, (3) secondary author or editor, (4) principal area shown (represented by a number from the Library of Congress G Schedule), (5) secondary area shown (Library of Congress number), (6) name of principal area shown, (7) name of secondary area shown, (8) brief title of map, (9) geographical coordinates for map area, (10) language, (11) whether a manuscript or printed, (12) printing technique, (13) dimensions, (14) number of pages or sheets, (15) whether a separate publication or part of a larger work, (16) country of publication, (17) city of publication, (18) publisher, and (19) source bibliography.

descriptions vary in the basic principles that underlay their compilation: some are cartobibliographies whose compilers attempted to make them complete within their stated limits, while others are catalogs of particular collections for which no claims are made that they are exhaustive. Fourth, there is the problem of varying definitions of what constitutes a “map.” Campbell, for example, does not describe city views, while Mickwitz and Miekkavaara list views as well as some tiny cosmographical diagrams that others might consider only marginally cartographic. Most of the sources consulted do include city and town views, and we have followed their lead, supplementing Campbell’s entries by adding the town views listed in his appendix and the list of Nuremberg Chronicle views in Rucker.⁵

Fifth, a decision needed to be made about how many appearances of a given map to count. Many maps first published in 1570 in Abraham Ortelius’s *Theatrum orbis terrarum*, for instance, were reprinted in twenty-four different editions before 1601. One of these is the map of Spain by Charles de l’Escluse; should it be counted as one instance of map publication or as twenty-four instances? The solution adopted here has been to count only the first appearance of a map printed from a given woodblock or copperplate. While this decision severely limits the number of maps in the study, it has the virtue of emphasizing a certain level of cartographic creativity over mere presswork. One can also be confident of having a more complete database, because the identification of maps printed from particular plates or blocks is easier than the identification of all appearances of maps printed from those plates or blocks. Of course, given the synthetic nature of the compilation, critical judgment is necessary; it is not always clear from the bibliographical descriptions whether two maps are separate productions or whether they represent later issues, states, or printings of another map.

A final caveat has to do with the survival rate of early maps. Skelton felt confident in asserting that, because of their awkward and fragile format, “the wastage or loss of early maps, up to the sixteenth century and even later, has been more severe than that of any other class of historical document.”⁶ There are a number of early maps whose existence is testified to in other documentary evidence, but of which no copy is now extant (these are included in the database). Similarly, a number of maps recorded in the database exist in only one or two copies. Skelton’s comment relates to maps published separately, but a great many maps, in fact most maps in the early modern period, were issued as integral parts of books. As figure 23.1 illustrates, throughout the period a high percentage of maps were included in books and atlases. In only one decade, the 1560s (1561–70), did separately published maps (slightly) outnumber those published in books, and the bulk of those were Italian engraved maps of the “Lafreri type,” which were almost always preserved in ad-

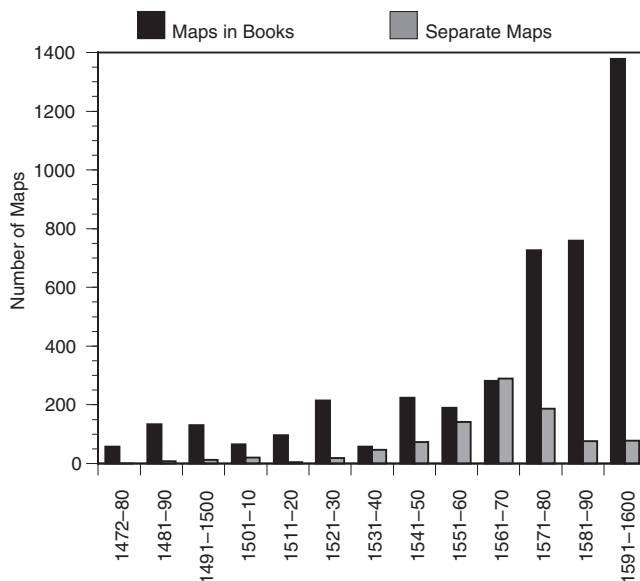


FIG. 23.1. NUMBER OF SEPARATE MAPS COMPARED WITH NUMBER OF MAPS IN BOOKS AND ATLASES, 1472–1600.

hoc atlases.⁷ The hard covers of a book have provided refuge for many an early map that might otherwise have been ravaged by wear and tear, and this indeed raises the question of whether figure 23.1 is representative of the actual situation. Separately published maps are undoubtedly under-represented.

Despite these caveats, it is believed that the “collective catalog” embodied in the database constitutes the most comprehensive listing of maps published before 1601. When collated to eliminate manuscript maps and duplicate entries and to isolate the first appearances of maps (that is, the first printings of individual woodblocks or copperplates), the total number of items in the database was reduced to some fifty-five hundred. It is this corpus that forms the basis for most of the analysis that follows.

ANALYSIS OF MAP PRODUCTION BY TYPE OF CARTOGRAPHY

The study database includes examples of several different cartographic genres, distinguishing among maps proper, celestial maps, cosmographical diagrams, and globes. The latter three categories make up a minuscule percentage of the total, representing only 40 items; for the pur-

5. Campbell, *Earliest Printed Maps*, 219–22 (appendix 1D, “Excluded Entries: Town Plans and Views”), and Elisabeth Rucker, *Die Schedelsche Weltchronik: Das größte Buchunternehmen der Dürer-Zeit* (Munich: Prestel, 1973).

6. R. A. Skelton, *Maps: A Historical Survey of Their Study and Collecting* (Chicago: University of Chicago Press, 1972), 26.

7. Karrow, *Mapmakers of the Sixteenth Century*, 230 n.

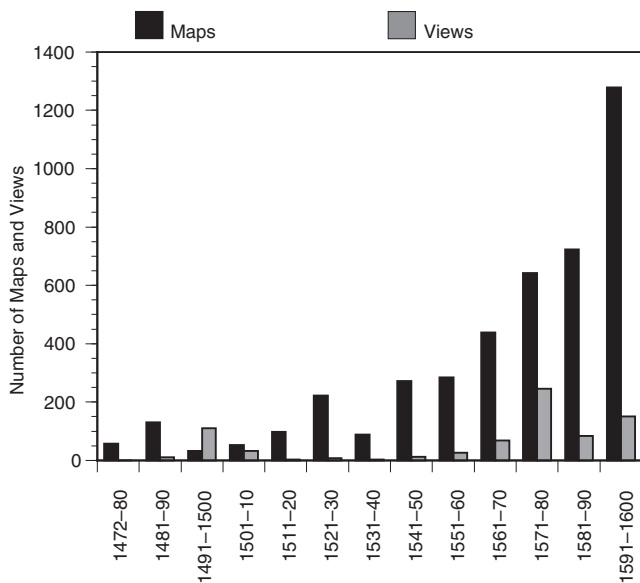


FIG. 23.2. NUMBER OF MAPS COMPARED WITH NUMBER OF VIEWS, 1472–1600.

poses of figure 23.2, all are classed together as maps. About 15 percent of items in the database are either perspective views or profiles, classed together in figure 23.2. Two decades were paramount in the production of views: the 1490s, with the publication of the Nuremberg Chronicle, and the 1570s, when the first two volumes of the *Civitates orbis terrarum* appeared.

ANALYSIS OF MAP PRODUCTION BY PRINTING TECHNIQUE

Every map included in this study is either a woodcut or an intaglio print. With the exception of a very few intaglio maps known to have been produced by etching, all the intaglio maps are instances of copper engraving. In the first decade studied, engravings (in the Bologna and Rome editions of Ptolemy's *Geography*) were the principal means of map reproduction (fig. 23.3). Subsequently, however, copper engraving lagged behind woodcut for the next eighty years, sometimes only slightly, but sometimes totally eclipsed (no intaglio maps have been located from the 1510s or 1520s). When copper engraving finally overtook the woodcut, the change was abrupt and decisive. In the 1550s, 73 percent of all maps were woodcuts. In the following decade, the percentages were exactly reversed: 73 percent were engravings. Thereafter, the percentage of woodcut maps plunged to a low of only 3 percent in the 1580s. The slight rise in the 1590s to 9 percent was due to the woodcut edition of an epitome of Ortelius, *Le miroir du monde*, that Zacharias Heyns published in Amsterdam in 1598.⁸

It has often been asserted that the woodcut was a largely

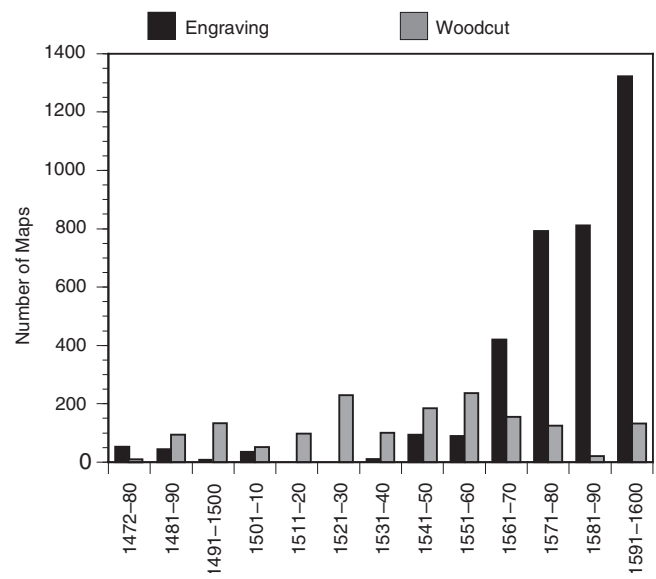


FIG. 23.3. NUMBER OF ENGRAVED MAPS COMPARED WITH NUMBER OF WOODCUT MAPS, 1472–1600.

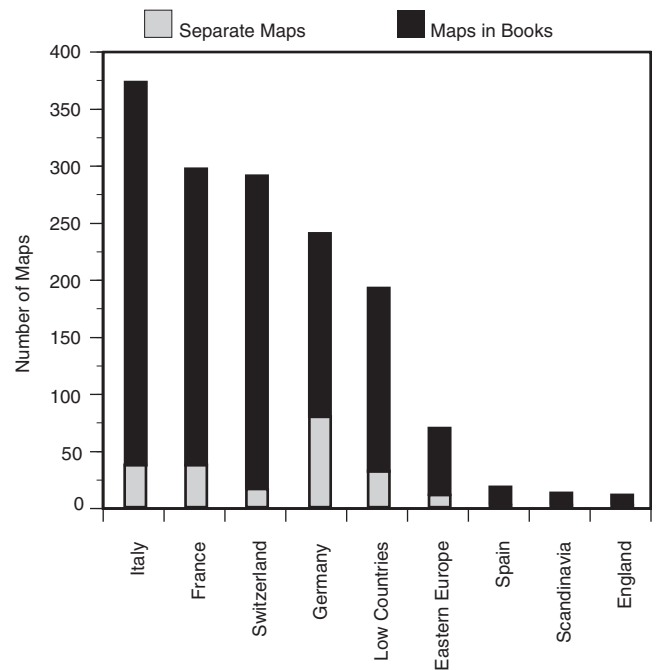


FIG. 23.4. PRODUCTION OF WOODCUT MAPS AND VIEWS BY REGION, 1472–1600.

northern European phenomenon.⁹ In the case of broadside prints and maps, that is undoubtedly the case. As figure 23.4 shows, three-quarters of all separate woodcut

8. On the development of the epitomes of Ortelius's *Theatrum*, see Koeman, *Atlantes Neerlandici*, 3:71–72, and Karrow, *Mapmakers of the Sixteenth Century*, 13.

9. David Woodward, *Maps as Prints in the Italian Renaissance: Makers, Distributors & Consumers* (London: British Library, 1996), 32.

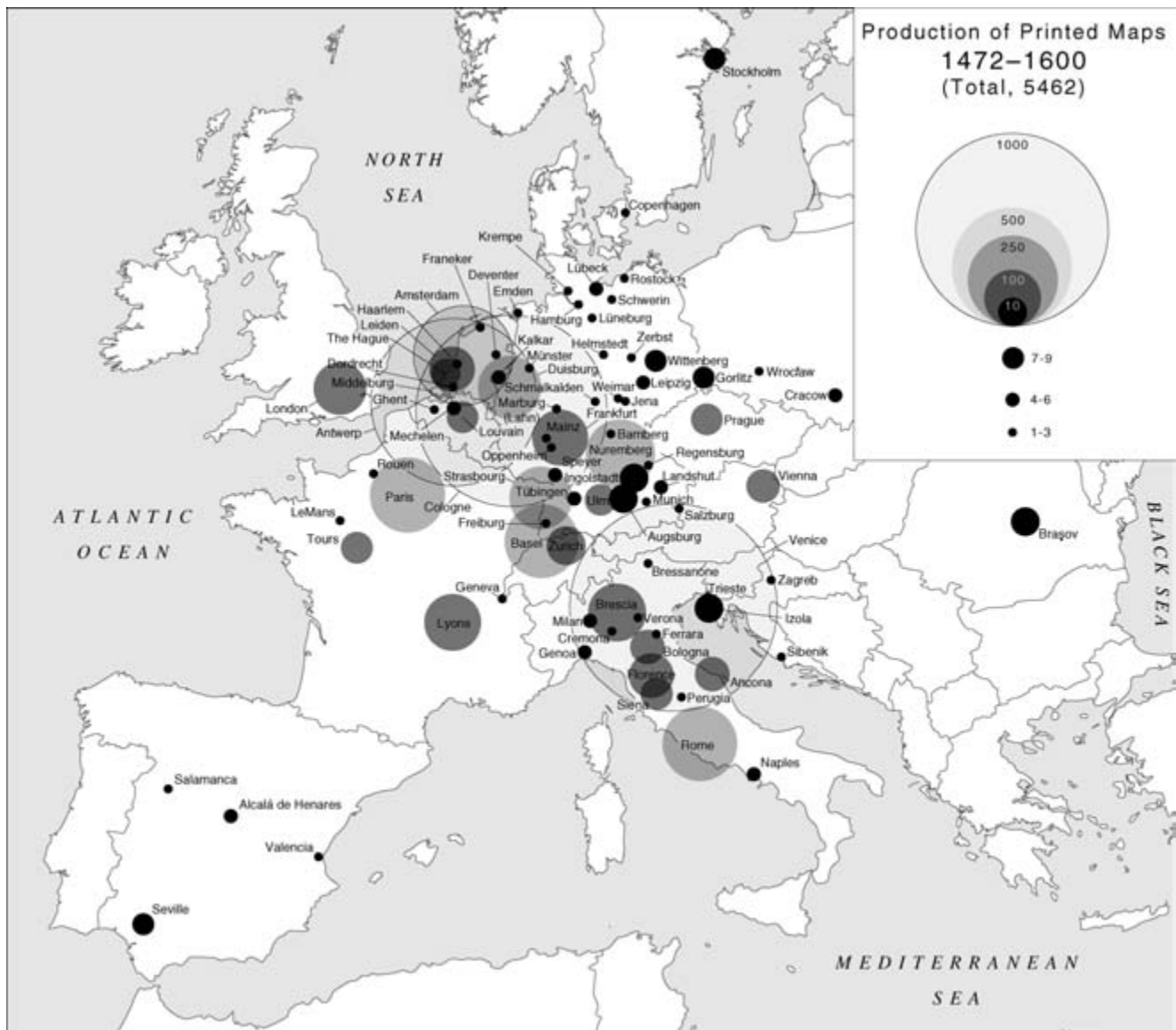


FIG. 23.5. THE PRODUCTION OF PRINTED MAPS, 1472–1600.

maps were printed in Germany, France, the Low Countries, and Switzerland. When we look at map production as a whole, though, including maps in books, figure 23.4 reveals a very different story: Italy is by far the largest source of woodcut maps.

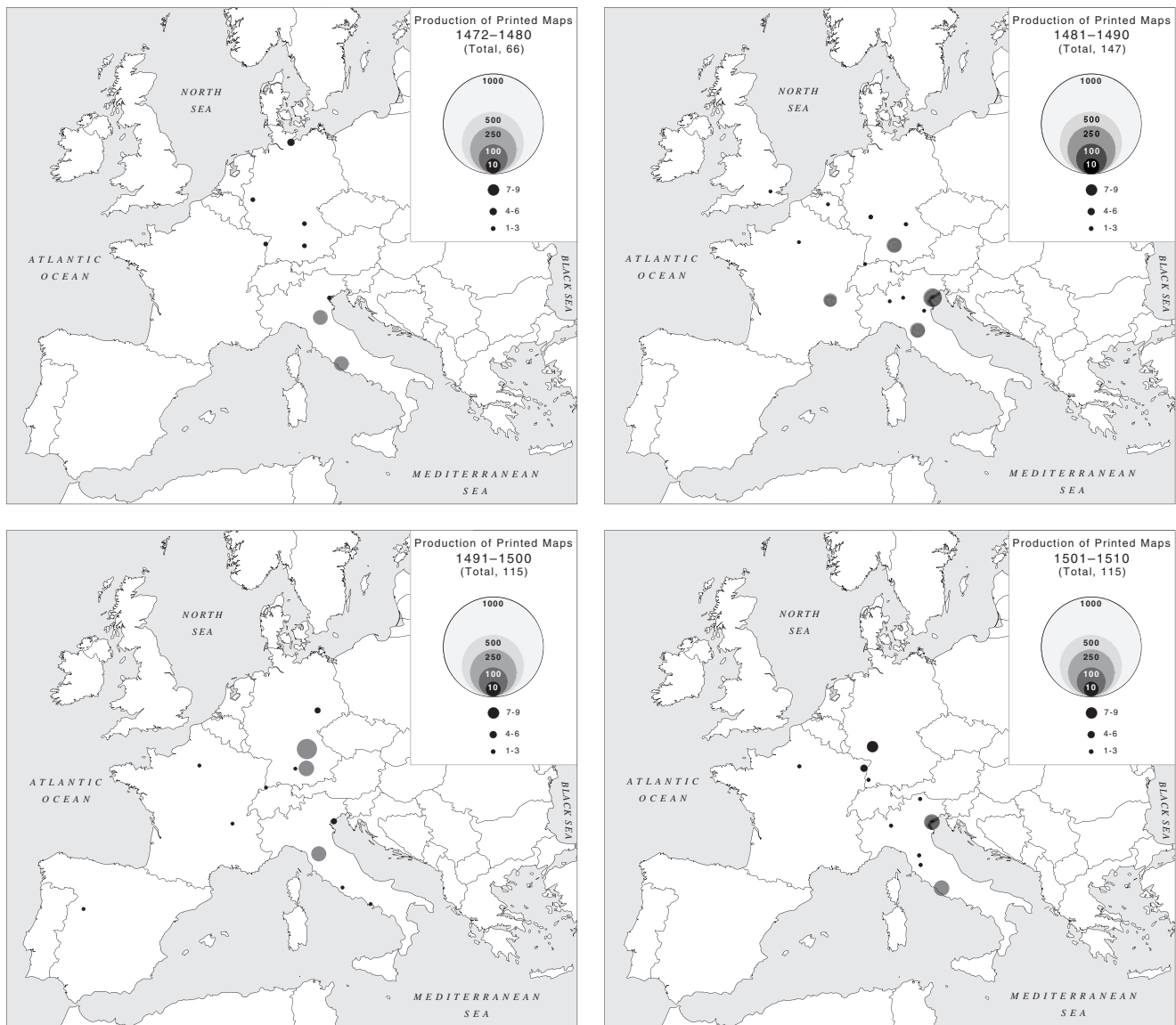
ANALYSIS OF MAP PRODUCTION BY DECADES

Figure 23.5 shows the geographical distribution of European map printing from 1472 through 1600. Figures 23.6–23.9 and 23.11–23.19 show the same data by decade. The scale of the graduated circles is the same for all maps to facilitate comparison. A decade begins with a year ending in one; for example, the decade labeled “1561–70” includes maps published between January

1561 and December 1570. In my text, for the sake of brevity, I will refer to this decade as “the 1560s.”¹⁰

First, a few general comments on these decade-by-decade analyses. Because many of the maps in the database bear no dates, dates were often assigned by the compilers of the catalogs and cartobibliographies studied. When the original compiler did not venture to assign a date, we have done so. Assigned dates may have been entered as, for example, “ca. 1560,” or “1555?” But for purposes of analysis, a single date is used, so the maps cited as examples would be counted as having been pro-

10. My decision to define the decades in this way, although it may seem counterintuitive, is based on the principle that we start counting with one, not zero. Historians of printing routinely begin a new period with years beginning with one. Thus the incunabula period of printing (the fifteenth century) includes items printed through December of the year 1500.



FIGS. 23.6–23.9. THE PRODUCTION OF PRINTED MAPS, 1472–1510. Upper left, 1472–1480; upper right, 1481–1490;

lower left, 1491–1500; lower right, 1501–1510.

duced in 1560 and 1555, respectively, and both would thus be products of the 1550s.

Book printing and publishing have always been primarily urban activities, concentrated in the larger towns and cities. The high proportion of maps that appear in books ensures that this pattern will be repeated in the case of map production. In addition, even more than book production, mapmaking requires specialized skills, such as woodblock cutting and engraving, and specialized equipment, such as polished copperplates and roller presses, skills and technologies unlikely to be found outside of larger towns. Specialized skills and technologies are likely to be clustered not only in cities, but also in a relatively small group of firms within those cities. Consequently, a city that is a major producer of maps is ultimately reducible to a small

handful (often just one or two) of publishers specializing in cartographic work. Furthermore, because this cartographic output is so apt to be concentrated in books and atlases, an impressive cluster of maps may represent, in fact, a single book produced by a single publisher.

Thus, in the first decade of map printing, the circles for the two largest centers, Bologna and Rome, represent, in fact, the maps of the 1477 and 1478 editions of Ptolemy's *Geography*, published respectively by Domenico de' Lapi and Arnold Buckinck (fig. 23.6). The circle for Lübeck represents the two maps in the 1475 *Rudimentum novitiorum*, and that for Augsburg the first printed map, the little T-in-O map in Isidore of Seville's *Etymologies* (1472). The following year saw the first map printed in France, in Strasbourg, in another edition of *Etymologies*.

For the 1480s, the three largest circles represent almost entirely the Ulm and Florence editions of Ptolemy's *Geography* (both 1482) and the 1485 Venetian edition of Bartolommeo dalli Sonetti's *isolario* (fig. 23.7). The smaller circles include the map and six views in the Mainz and Lyons editions (1486 and 1488) of Bernard von Breydenbach's *Peregrinatio in Terram Sanctam*. Total production more than doubled over the previous decade. We can already see a general pattern in which map production was concentrated in a swath across the Continent from northwest to southeast, including the Low Countries, Switzerland, southern and western Germany, eastern France, and Italy.

Map production in the 1490s was dominated by the woodcuts of the Nuremberg and Augsburg editions (1493 and 1496) of Hartmann Schedel's *Liber chronicarum*, commonly known as the Nuremberg Chronicle (fig. 23.8). The most lavishly illustrated book to date, the Nuremberg edition contains over one thousand woodcut illustrations, including many identified as views of cities. Many of the illustrations are purely imaginary, and many were used more than once, so that of the ninety-seven cuts identified as town views, only thirty-three are views of actual places, while the remaining sixty-four "fantasy" views are printed from only seventeen different woodblocks. Only the two maps and bona fide views are counted in this inventory. The total Nuremberg production is swelled by the separate maps of Erhard Etzlaub (1492 and 1500?) and by a broadside with views of twelve towns (ca. 1497). Spain enters into our view for the first time with a little woodcut world map published in Salamanca in an edition of Pomponius Mela's *De chorographia* (1498). This was apparently the first map to be cut in Spain, although not the first to be printed there. That distinction belongs to an edition of Breydenbach's work published in Saragossa earlier in the same year, but because it was printed using the woodblocks first prepared for the 1486 Mainz *editio princeps*, and because only the first appearance of a print from a given block or plate is included in the database, Saragossa does not appear here as a map publishing center. Total production for this decade shows a drop of about 20 percent below the level of the 1480s. It seems as though, with the initial drive to publish editions of Ptolemy's classic having been satisfied (seven editions with maps appeared before 1491), the demand for maps was temporarily sated.

The first decade of the sixteenth century represents an even more drastic decline in the production of printed maps (fig. 23.9). The downturn in the two decades before 1510 is rather puzzling. One might well expect that the period of the great discoveries, when the size of the known world nearly doubled, would have a noticeable effect on the production of new maps. This was clearly not the case (fig. 23.10), and in fact, throughout the period under study, cartographic interest in the "Old World" far out-

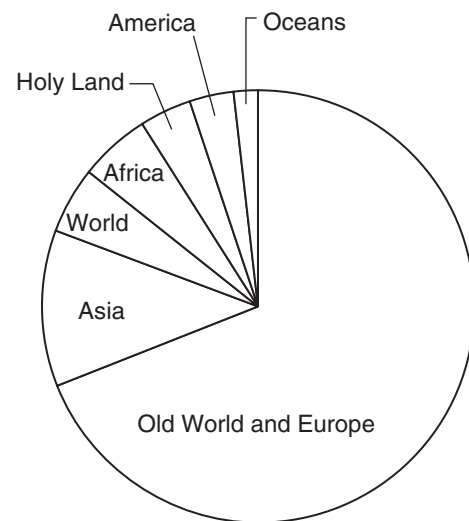
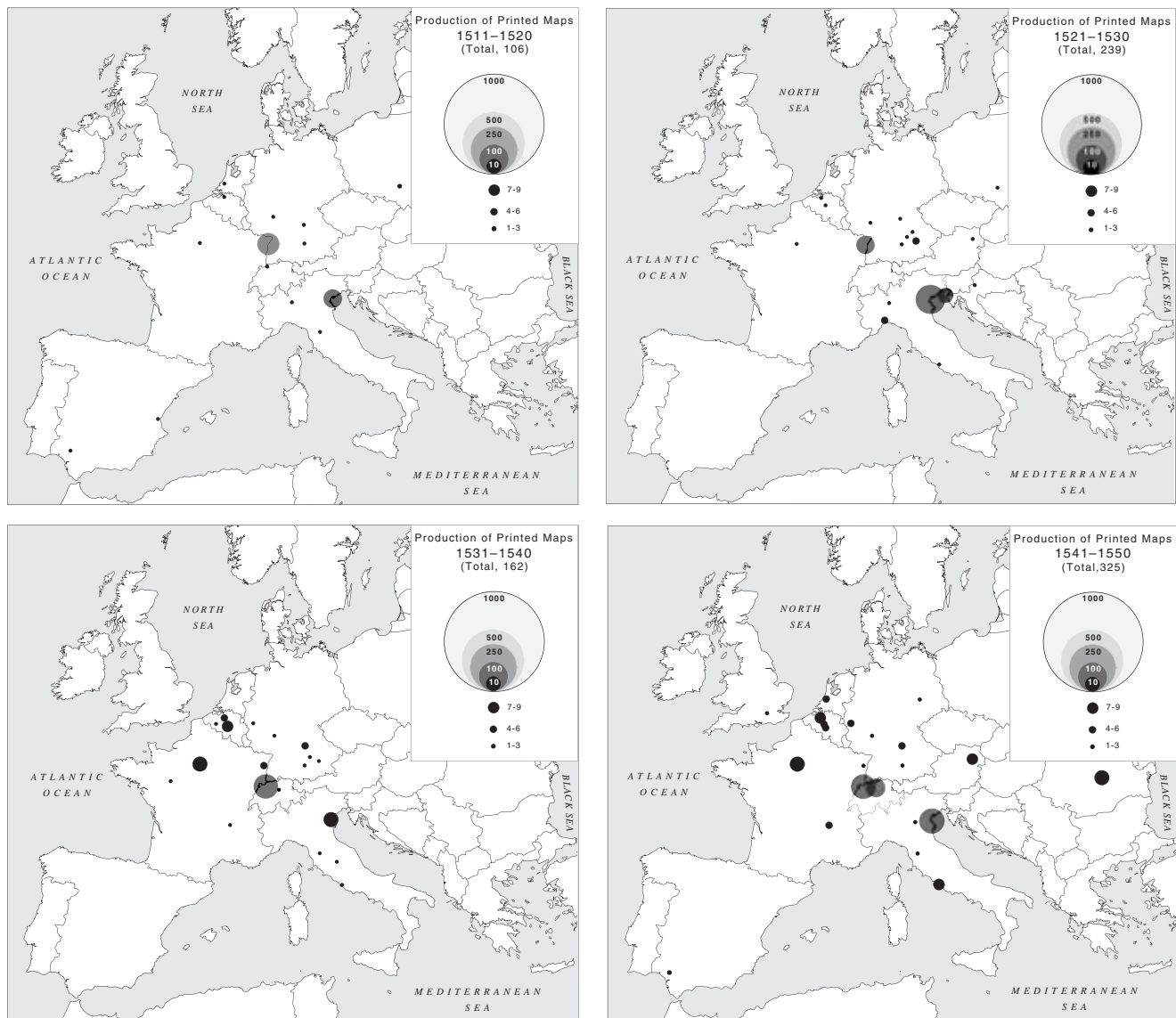


FIG. 23.10. AREAS DEPICTED ON MAPS, 1472–1600.

weighed interest in the new. Italy was most active, with the main centers in Rome (responsible for the 1507 edition of the *Geography*) and Venice (responsible for Jacopo Filippo Foresti da Bergamo's *Nouissime hystoria[rum] omnium repercussiones* [1503], with its twenty-three town views). In Germany, Speyer appears for the first and only time during the period being considered, as the home of Peter Drach's edition of Breydenbach's *Peregrinatio* (1502). Despite the small numbers, however, we begin to see some real cartographic innovations. Martin Waldseemüller's globe and wall map of the world appeared in Strasbourg (or, less likely, in Saint-Dié, some eighty-five kilometers distant), while Italy supplied important maps by Giovanni Matteo Contarini and Benedetto Bordone.

The 1510s were dominated by the editions of Ptolemy's *Geography* published in Venice (edited by Bernardo Silvano, 1511) and Strasbourg (edited by Waldseemüller, 1513) (fig. 23.11). The now familiar Netherlandish-Italian axis was stretched ever so slightly by the publication of maps and views in Seville, Valencia, and Cracow.

The bulk of map production in the 1520s can be traced to the edition of the *Geography* by Lorenz Fries (Strasbourg, 1522) and the *isolario* of Benedetto Bordone (Venice, 1528) (fig. 23.12). The circle east of Venice marks Isola in Istria, where Pietro Coppo published a set of maps, now known in only one copy, in 1524. This decade also marked the appearance of map printing in Bamberg, Genoa, Ingolstadt, Landshut, Oppenheim, Regensburg, and Zagreb, all but two of which proved ephemeral and do not reappear as map centers again before 1601. In terms of total numbers, the 1520s represent a spike in map production. In a recent quantitative study of early book production, the 1520s registered a similar peak in the numbers of books published in vernacular languages, a phenomenon that seems linked, in northern Europe at



FIGS. 23.11–23.14. THE PRODUCTION OF PRINTED MAPS, 1511–1550. Upper left, 1511–1520; upper right,

1521–1530; lower left, 1531–1540; lower right, 1541–1550.

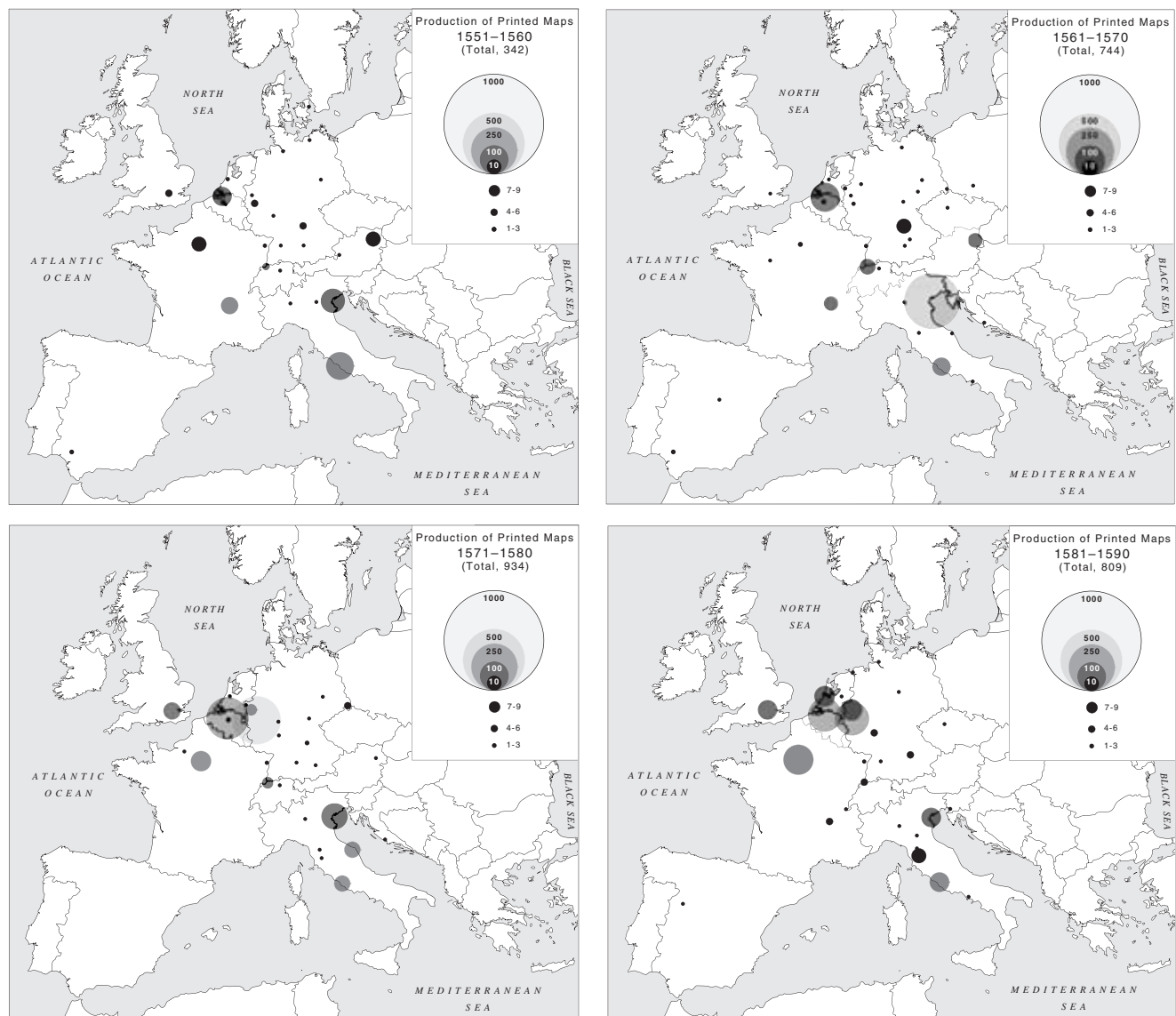
least, to the onset of the Protestant Reformation.¹¹ Both the Fries and Bordone works are in the vernacular, but two titles are insufficient evidence on which to posit any link between vernacular publication and an increase in map production. The anomaly is probably most simply explained by the fact that Bordone's book, with its 111 maps, represents the largest single cartographic corpus to date.

The map of the 1530s is dominated by the production in Basel, where printer Heinrich Petri began his long association with Sebastian Münster with the first publication, in 1540, of the latter's edition of Ptolemy's *Geography* (fig. 23.13). Münster supplemented the twenty-seven Ptolemaic maps with twenty-one modern maps of his own devising, woodcuts that would reappear in editions of Ptolemy's *Geography* and in Münster's own cosmog-

raphy for another eighty-eight years. In Paris, the woodcut publishers Chrétien Wechel and Jérôme de Gourmont were active, in Venice, Matteo Pagano and Giovanni Andrea Valvassore, while in Louvain we see the early productions of Gaspard van der Heyden, Gemma Frisius, and Gerardus Mercator. Overall production was considerably below the level of the previous decade.

In terms of numbers, map production in the 1540s can be largely explained by the publication of four titles: in Basel, Münster's *Cosmography* (1544 and 1550); in

11. Uwe Neddermeyer, *Von der Handschrift zum gedruckten Buch: Schriftlichkeit und Leseinteresse im Mittelalter und in der frühen Neuzeit, quantitative und qualitative Aspekte*, 2 vols. (Wiesbaden: Harrassowitz, 1998), 2:698–705.



FIGS. 23.15–23.18. THE PRODUCTION OF PRINTED MAPS, 1551–1590. Upper left, 1551–1560; upper right,

1561–1570; lower left, 1571–1580; lower right, 1581–1590.

Venice, Giacomo Gastaldi's edition of Ptolemy's *Geography*, with thirty-four modern maps (1548); and in Zurich, the *Rudimenta cosmographica* of Johannes Honter (1546) and Johannes Stumpf's *Gemeiner loblicher Eydgnoschafft Stetten, Landen vnd Völckeren Chronick*, known as the Swiss Chronicle (1548) (fig. 23.14). Together, these titles account for more than half the map production of the decade. Most production was arrayed along the northwest-southeast axis, but there were two notable outliers: Vienna, where maps by Wolfgang Lazius and Augustin Hirschvogel appeared, and the remote German colony of Kronstadt (now Braşov, Romania), where Honter had established a pioneering print shop in 1535.

It was in the 1550s that Antwerp first emerged as the northwestern anchor of the Netherlandish-Italian axis, its production split about half and half between maps in

books and separates (fig. 23.15). Lyons was also a presence, on the strength of Guillaume Guérault's *Epitome de la corographie de l'Europe* (Balthazar Arnoullet, 1553). France's second city was a hotbed of heretical publishing, and the shadow of the Inquisition fell on two cartographic products of the Lyons press. A Spanish scholar, Miguel Servet, had been condemned by the Inquisition for publishing a book denying the Trinity in 1531. Living in Lyons under an assumed name, he published an edition of Ptolemy's *Geography* in 1535, with a second edition in 1541.¹² These were both added to the indictment because the text on the back of the map of the Holy Land impugned

12. The 1541 edition was actually published in Vienne, just south of Lyons. Neither edition is included in this study's database because they were printed reusing the Strasbourg woodblocks of 1522.

the fertility of Palestine (even though that text had been taken over unchanged from the 1522 Lorenz Fries edition). Then in 1553, Servet had his *Christianismi restitutio* published by Guérout and Arnoullet. Their support of the heretic got Arnoullet imprisoned and forced Guérout to flee, foreclosing the possibility of another projected volume of their *Epitome*.¹³ With 178 new maps, or just over half the total for the decade, Italy had begun its dominance of the European map trade, which peaked in the next decade.

Because we consider the 1560s as having ended in December 1570, the decade includes the seventy maps of the first edition of Ortelius's *Theatrum orbis terrarum*, the first so-called modern atlas and a work that began the movement of cartographic publishing to the Low Countries (fig. 23.16). But it just began that movement, because the 1560s remained the Italian decade. Fully 62 percent of all new maps that appeared in Europe during the decade were published in Italy, the great majority of them in Venice. Beside Venice and Antwerp, with some 400 and 120 maps, respectively, the other centers dwindled to insignificance. Only five other cities produced more than 10 maps each in the decade. And, in distinction to the firmly established pattern elsewhere, almost two-thirds of the Italian maps were separate publications.

During the 1570s, the center of gravity shifted decisively to northwestern Europe (fig. 23.17). Antwerp was the source of many additional maps for Ortelius's *Theatrum*; of the first pocket-sized *Theatrum*, called the *Epitome*; and of a large atlas by Gerard de Jode. But Antwerp was even overshadowed by Cologne, where the town plans and views of Georg Braun and Frans Hogenberg's *Civitates orbis terrarum* accounted for most of the production of over three hundred maps. Although in Germany, not the Low Countries, Cologne was very much in Antwerp's cartographic orbit; Koeman considered the *Civitates* an essentially Netherlandish product.¹⁴

The total number of new maps dropped slightly in the 1580s, but this can hardly be read as indicating a decline in the interest in maps: the strong popularity of the *Theatrum* and its six editions during the decade ensured that more maps than ever were being put before the public. Figure 23.18 clearly shows a quite thorough shift of map production to the Low Countries, which we may take to include neighboring Cologne and Duisburg. Four cities—Antwerp, Leiden, Cologne, and Duisburg—together produced 64 percent of all new maps in this decade. London production includes the maps of Christopher Saxton's atlas. The impressive showing of Paris was really an anomaly due to the idiosyncratic “Grand insulaire” (1586) of André Thevet, a massive and mostly manuscript work known in only one copy, but which includes eighty-four maps engraved for the work. A few of these are known in other copies, but it seems that Thevet's maps were never really published in the usual sense of the term.

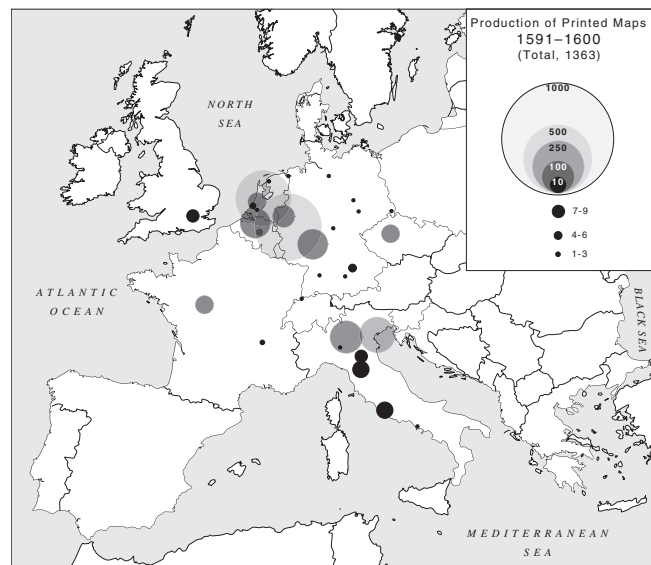


FIG. 23.19. THE PRODUCTION OF PRINTED MAPS, 1591–1600.

For the final decade of this study, the period from 1591 through 1600, production included over thirteen hundred new maps, far and away the largest number during the period of study (fig. 23.19). A large portion of these (almost 30 percent) were published in Cologne, which, as documented by Meurer, emerged as one of the great map centers of Europe in the last three decades of the sixteenth century.¹⁵ It was also the first city in which map publishing became the province of more than one or two houses. Bertram Buchholtz, Matthias Quad, Lambert Andreae, Peter Keschedt, Johann Christoffel, Gottfried von Kempen, and Cornelius Sutor were all responsible for at least one Cologne atlas during this decade. The Cologne atlases were mostly of smaller format and highly derivative, but they undoubtedly had a profound impact on the development of a map-reading public. The other big story of the 1590s was the sudden emergence of Amsterdam, late in the decade, as a major map publishing center. The Dutch capital would become dominant in the next century, but it was already a major player in the 1590s, with about one-fifth of the total production, largely concentrated in the atlases of Barent Langenes and Zacharias Heyns (both 1598).¹⁶ In the south, meanwhile, Italy made a respectable showing, with about 22 percent of the total production,

13. For more on this episode, see László Gróf, “Burned for His Beliefs: The Story of Michael Servetus,” *Map Collector* 21 (1982): 8–12.

14. Koeman included it in his *Atlantes Neerlandici*, 2:10–25.

15. Meurer, *Atlantes Colonienses*.

16. The title page of the 1598 first edition of Langenes's *Caert-thre-soor* gives Middelburg as the place of publication, but indicates it was for sale by Cornelis Claesz. in Amsterdam. Peter van der Krogt asserts that the true place of publication was Amsterdam (personal communication, 6 October 2001).

attributable in large measure to an Italian-language epitome of the *Theatrum* published in Brescia (1598) and to two Venetian publications: an edition of Ptolemy's *Geography* (edited by Giovanni Antonio Magini, 1596) and Pietro Bertelli's album of Italian city views (1599).

ANALYSIS OF MAP PRODUCTION BY REGION

As Figure 23.20 clearly illustrates, Italy, Germany, and the Low Countries were the dominant producers of printed maps before 1601. Together, these three regions accounted for 80 percent of the total output of new maps. In all three regions, there was a well-developed international trade, and their publishing houses helped supply a Continental demand for maps. France and Switzerland are probably the only other countries whose maps could have had much influence outside their borders. The remaining regions (England, the countries of eastern Europe, Spain, and Scandinavia) had a very limited influence. Their production would have been almost entirely for home consumption, and all four regions are combined under one rubric, "Others," in figure 23.21. In that figure, the production of each region is displayed in stacked layers, beginning with the most prolific region (Italy) at the bottom and with other regions overlaying it in decreasing order of importance.

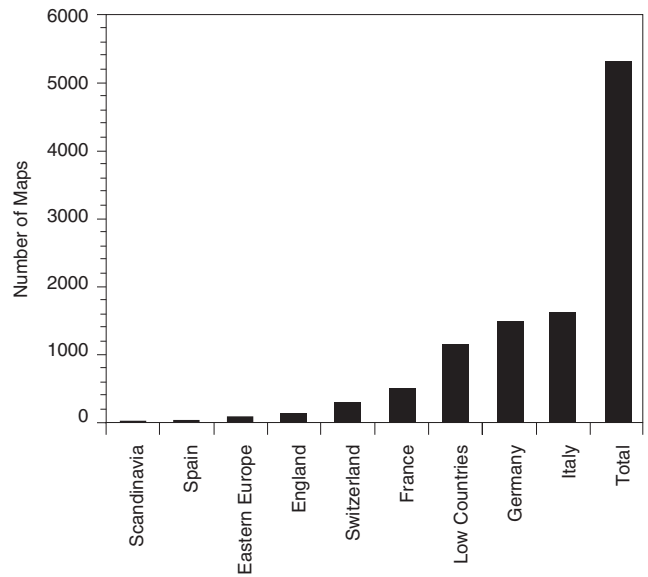


FIG. 23.20. TOTAL MAP PRODUCTION BY REGION, 1472-1600.

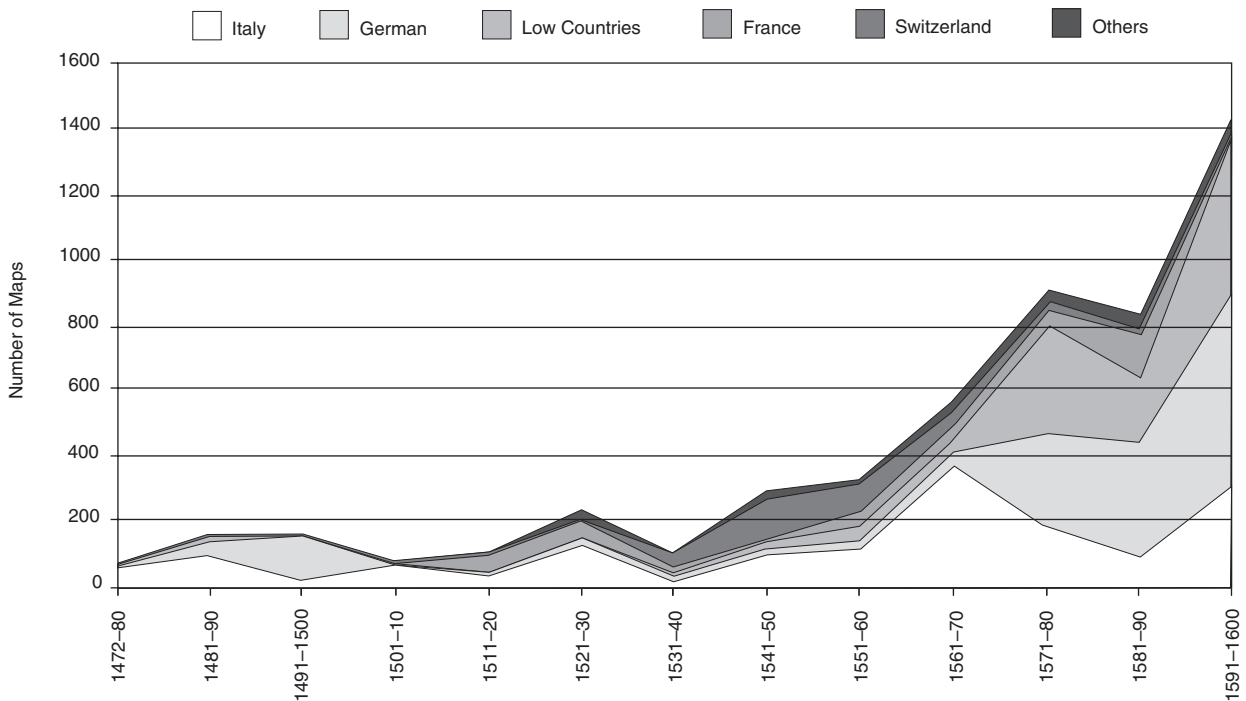


FIG. 23.21. MAP PRODUCTION BY REGION AND DECADE, 1472-1600.

CONCLUSION

In limiting this analysis to the first appearance of a given map, we have, as indicated, emphasized cartographic creativity over “mere presswork.” But the ultimate success of what I have called “the cartographic revolution” depended on just this feverish presswork, the multiplication of the fifty-five hundred maps analyzed here by a factor of hundreds. Estimating the total number of maps in circulation in the early modern world is fraught with difficulty, but that number was clearly very large. If each of our fifty-five hundred maps was printed in an edition of only 250 (undoubtedly a low average, for we know of many editions of 1000 and more copies), we would be talking about over 1.3 million individual maps extant in 1600 as compared to some sixty thousand in 1500.

Perhaps a clearer idea of the relative prevalence of maps can be gained by comparing these estimated numbers of maps with the estimated population of Europe. In 1500, there was one map for every 1400 persons; by 1600, there was one map for every 7.3 persons. But the population of Europe in these calculations includes Scandinavia, southern and eastern Europe, and Russia to the Urals. If we re-

strict the comparison to the cultural heartlands of Europe, where more than 90 percent of the maps were produced (and, presumably, where most of them stayed), the figures are even more striking: one map for every 720 persons in 1500, one for every four in 1600.¹⁷

These numbers, crude though they may be, signal a sea change in European consciousness of the possibilities of the map. What had been, in the Middle Ages, a marginal genre unlikely to have been known or used by any but a tiny handful of scholars, became something common, something an average European from almost any walk of life might recognize and use. This change was so marked that it seems no exaggeration to call it a revolution.¹⁸

17. Population figures from Colin McEvedy and Richard Jones, *Atlas of World Population History* (New York: Facts on File, 1978), 18. The second comparison is based on McEvedy and Jones's figures for England and Wales, France, Belgium and Luxembourg, the Low Countries, Germany, Switzerland, Austria, and Italy (pp. 43, 56, 63, 65, 69, 87, 89, and 107, respectively).

18. The last two paragraphs are slightly revised from my dissertation, Robert W. Karrow, “Intellectual Foundations of the Cartographic Revolution” (Ph.D. diss., Loyola University of Chicago, 1999).