

# 37 • Cartography in the Kingdom of Naples during the Early Modern Period

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In writing the history of cartography in the kingdom of Naples during the early modern period, one encounters a number of “absences”: there are maps that circulated for only a very short time or among a very restricted group of people, maps that have been either forgotten or lost without a trace, and maps that were never completed or never printed. And whether this absence is an accidental or inherent characteristic of the works concerned, it is symptomatic of the cultural and political vassalage that southern Italy suffered from the early years of the sixteenth century right through to 1734 (that crucial year in Neapolitan history that saw the birth of an independent government). The period covered here runs from the founding of the kingdom of the Two Sicilies by Alfonso V of the House of Aragon in 1443 through the periods of viceroys under Spain from 1504 to the middle of the seventeenth century, coinciding almost exactly with the anti-Spanish riots of 1648 that had such severe effects on the city’s economic and social life.

Along with “silences” and “secrets,” the previously mentioned absences provide fruitful terrain for an investigation into the ideological aspects of Neapolitan cartography. Harley observed: “That which is absent from maps is as much a proper field for enquiry as that which is present,”<sup>1</sup> and this comment can cover not just a single map but the entire output of a particular society or period. The occurrence of such absences in even more recent periods of history reveals that the extent of cartographic knowledge (in both a quantitative and a qualitative sense) is not dependent simply on technological development. Expectations and pressures of various kinds come into play here. And while all of these have a political element (as Harley put it, they embody a concern “to maintain and legitimise state power”),<sup>2</sup> they might also, in a more general sense, be seen as depending on the nature of institutions, on prevailing economic and social conditions, and even on the mental cartography that each society develops for itself. To move beyond these vague initial considerations and give a definite example, we can affirm that for over four centuries Neapolitan cartography put an unusual degree of emphasis on the matter of borders and the representation of the region of Campania Felix. In effect, these sectoral aspects of cartography would end up becoming

constant—metahistoric—features of all of Neapolitan cartography. However, an exclusively political-economic reading does not offer an adequate explanation of this phenomenon; clearly, factors relating to the collective imagination and psyche also come into play here.<sup>3</sup>

While the state of vassalage and political dependence was a decisive cause of the absences in Neapolitan cartography, one should not ignore the effect of other factors that were more strictly connected with geographical and economic considerations. As an example of such factors, one might take the pattern of settlement in southern Italy,

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Abbreviations used in this chapter include: ASN for Archivio di Stato, Naples, and *Lexikon* for Ingrid Kretschmer, Johannes Dörflinger, and Franz Wawrik, eds., *Lexikon zur Geschichte der Kartographie*, 2 vols. (Vienna: Franz Deuticke, 1986).

1. J. B. Harley, “Silences and Secrecy: The Hidden Agenda of Cartography in Early Modern Europe,” *Imago Mundi* 40 (1988): 57–76, esp. 58. See Harley’s stimulating discussion focused on the development of “an adequate theory concerning the political silences in maps” (pp. 57–58); the article is complete with ample references.

2. Harley, “Silences and Secrecy,” 58. On the themes of cartography and power, see the interesting discussions in Massimo Quaini’s various works: “L’Italia dei cartografi,” in *Storia d’Italia*, 6 vols. (Turin: Einaudi, 1972–76), 6:3–49; “I viaggi della carta,” in *Cosmografi e cartografi nell’età moderna* (Genoa: Istituto di Storia Moderna e Contemporanea, 1980), 7–22, republished with some additions under the title “Fortuna della cartografia,” *Erodoto* 5–6 (1982): 132–46; “Il ‘luogo cartografico’: Spazio disciplinare o labirinto storiografico?” in *Atti della giornata di studio su: “Problemi e metodi nello studio della rappresentazione ambientale,” Parma, 22 marzo 1986*, ed. Pietro Zanlari (Parma: Istituto di Architettura e Disegno, Facoltà di Ingegneria, Università degli Studi di Parma, 1987), 49–55.

3. On the theme of the imagination as an area of historical research, see Evelyn Patlagean, “Storia dell’immaginario,” in *La nuova storia*, 3d ed., ed. Jacques Le Goff, trans. Tukery Capra (Milan: Mondadori, 1987), 289–317. The interesting ideas in Leonardo Olschki’s *Storia letteraria delle scoperte geografiche: Studi e ricerche* (Florence: Olschki, 1937) relating to the cartographic imagination are open to further development. Of particular relevance are his distinctions between empirical and ideological geography (pp. 143–44) and the section dealing with the persistence of myths (pp. 155–63), both to be found in the chapter titled “Realtà, convenzione e immaginazione nelle relazioni di viaggio del Medio-evo.” Studies of the cartographic imagination are also found in the section headed “Cartografia dell’immaginario” in *Arte e scienza per il disegno del mondo*, exhibition catalog (Milan: Electa, 1983), 237–56, which contains a few essays that appeared in *Cartes et figures de la terre*, exhibition catalog (Paris: Centre Georges Pompidou,

where towns were dotted across the territory but without the links and interconnections that are essential to harmonious development.<sup>4</sup> The result of this pattern of settlement was a series of closed economies, with underdeveloped trade and commerce in the hinterland and a coastal trade that relied on vessels of small tonnage. Together with this fragmentary socioeconomic situation, one finds very uneven development in cartographic knowledge; coverage was patchy, and the cartographers of the period revealed a particular focus on or predilection for certain themes or geographical areas.

I have already mentioned the focus on the question of borders and on the depiction of the Naples region itself; further examples of characteristic features of Neapolitan cartography are the strategic interest shown in certain fortresses and the economic-administrative focus on certain axes—for instance, the region's main *tratturi* (sheep tracks) or the *regi lagni* (man-made canals constructed to drain water from reclaimed land). A study of the collections of maps and illustrations of southern Italy that can be found in Madrid, Naples, Paris, Simancas, and Vienna shows how the images differ according to location and period.<sup>5</sup> The themes covered are almost all among those mentioned earlier, but there is no temporal development that reveals a continuity of study rather than occasional attention. Each work seems to be related to some specific event—and seems to exist in a cartographic vacuum.

The scarcity of cartographic images or other illustrations becomes even more striking when we look at printed works, which naturally had a greater influence on subsequent output and common geographical knowledge than did manuscript maps that were largely unknown to the general public: printed maps could easily reach beyond the limited circle of the court or fiefdom that had initially commissioned them and thus became one of the prime means for conveying the image of a nation's size and might (in effect, cartography could provide a map or emblem of the modern state, in which the population as a whole might recognize itself as part of a collectivity). On this point, we should highlight a very simple fact that has so far passed unnoticed: there is no extant topographical or geographical map or city view printed or engraved in Naples before the end of the sixteenth century.<sup>6</sup> All of the older geographical charts, maps, and city views relating to southern Italy were printed outside the kingdom.

#### ASTRONOMY AND GEODESY AT THE ARAGONESE COURT OF NAPLES

The renaissance of cartography in Europe coincides with the emergence of the modern state during the course of the fifteenth century. One of the first, or, as Ryder has speculated, “perhaps the first, of European states to exhibit many of those characteristics that historians have labelled

‘modern,’”<sup>7</sup> the kingdom of Naples was by the middle of the fifteenth century enjoying circumstances that were favorable to the development of modern cartography and modern techniques for territorial and geographical surveying. Unfortunately, for many reasons, this process did not culminate in the formation of a state and the self-identification of the collectivity as a nation; foremost

1980), with some interesting additions by Jacques Le Goff, Marina Paglieri, and others. The bibliography on the geography of fantastic and imaginary—a rather different topic, it should be pointed out, to that of the cartographic imagination—has recently increased with the appearance of various noteworthy works. As well as those already cited, see Omar Calabrese, Renato Giovannoli, and Isabella Pezzini, eds., *Hic sunt leones: Geografia fantastica e viaggi straordinari* (Milan: Electa, 1983), which covers the various themes and approaches to them, and “Imaginary Map” and “Symbolic Map,” in *Cartographical Innovations: An International Handbook of Mapping Terms to 1900*, ed. Helen Wallis and Arthur Howard Robinson (Tring, Eng.: Map Collector Publications in association with the International Cartographic Association, 1987), 37–40 and 68–69.

4. See Philip Jones, “Economia e società nell'Italia medievale: La leggenda della borghesia,” in *Storia d'Italia: Annali*, vol. 1, *Dal feudalesimo al capitalismo*, ed. Ruggiero Romano and Corrado Vivanti (Turin: Einaudi, 1978), 185–372, esp. 201ff.

5. On the cartographic collections in these institutes, see M. A. Martullo Arpago et al., eds., *Fonti cartografiche nell'Archivio di Stato di Napoli* (Naples: Ministero per i Beni Culturali e Ambientali, Ufficio Centrali per i Beni Archivistici, Archivio di Stato di Napoli, 1987), which gives the first results of a study of the collections in the state archives in Naples; Archivo General de Simancas, *Mapas, planos y dibujos*, 2 vols., by Concepción Alvarez Terán and María del Carmen Fernández Gómez (Valladolid: El Archivo; [Madrid]: Ministerio de Cultura, Dirección General de Bellas Artes, Archivos y Bibliotecas, 1980–90), vol. 1, and Ilario Principe et al., eds., *Il progetto del disegno: Città e territori italiani nell'Archivio General di Simancas* (Reggio Calabria: Casa del Libro, 1982), 121–44, on the archives of Simancas; Elena Santiago Páez, ed., *La Historia en los Mapas Manuscritos de la Biblioteca Nacional*, exhibition catalog (Madrid: Ministerio de Cultura, Dirección General del Libro y Bibliotecas, 1984), on the Biblioteca Nacional in Madrid; and Daniela Ferrari, “Fonti cartografiche di interesse italiano presso il Krigsarchiv di Vienna,” *L'Universo* 70 (1990): 354–61, on the Kriegsarchiv in Vienna. The cartography collections in the rare manuscripts section of the Biblioteca Nazionale in Naples are cataloged according to author and location, while the Cartes et Plans section in the BNF catalogs such works according to their collection of provenance (Collection d'Anville, Dépôt de la Marine, etc.).

6. See Vladimiro Valerio (with a contribution by Ermanno Bellucci), *Piante e vedute di Napoli dal 1486 al 1599: L'origine dell'iconografia urbana europea* (Naples: Electa Napoli, 1998).

7. A. F. C. Ryder, *The Kingdom of Naples under Alfonso the Magnanimous: The Making of a Modern State* (Oxford: Clarendon, 1976), vii. On the economic, political, and artistic situation in southern Italy (seen in relation to the situations in the other states under the Aragonese crown), see the essays in *IX Congresso di Storia della Corona d'Aragona, Napoli, 11–15 aprile 1973, sul tema La Corona d'Aragona e il Mediterraneo: Aspetti e problemi comuni, da Alfonso il Magnanimo a Ferdinando il Cattolico (1416–1516)*, 4 vols. (Naples: Società Napoletana di Storia Patria, 1978–84), particularly the original work by Ferdinando Bologna, “Apertura sulla pittura napoletana d'età aragonese,” 1:251–99, together with his *Napoli e le rotte mediterranee della pittura da Alfonso il Magnanimo a Ferdinando il Cattolico* (Naples: Società Napoletana di Storia Patria, 1977), which was developed from his 1978 paper.



FIG. 37.1. REFERENCE MAP OF SOUTHERN ITALY.

among them were the continuing widespread disputes between rival feudal lords, whose power the monarch had been unable to reduce because of his own commitments to war both within and outside his kingdom. The final blow to the kingdom's independent existence as a nation came as a result of the political upheavals in the late fifteenth century, which deprived a large number of Italian states of autonomous government. Yet when Alfonso V of Aragon ascended to the throne of the kingdoms of Naples and Sicily in 1443, the basis had been laid for the foundation of a single state of southern Italy, which was to form part of the "association of States under the Crown of Aragon."<sup>8</sup> (For a reference map, see fig. 37.1.)

The Aragonese court encouraged scientific and geographical studies, as can be seen both from the king's own rich library and from various receipts in the royal treasury,

which register payments made to the miniaturists and cosmographers commissioned to draw up geographical maps.<sup>9</sup> What is more, the court's determination to achieve

8. Ernesto Pontieri, "Aragonesi di Spagna e aragonesi di Napoli nell'Italia del Quattrocento," in *IX Congresso di Storia della Corona d'Aragona, Napoli, 11-15 aprile 1973, sul tema La Corona d'Aragona e il Mediterraneo: Aspetti e problemi comuni, da Alfonso il Magnanimo a Ferdinando il Cattolico (1416-1516)*, 4 vols. (Naples: Società Napoletana di Storia Patria, 1978-84), 1:3-24, esp. 3.

9. On the lost Aragonese library, see the monumental work of Tamaro de Marinis, *La biblioteca napoletana dei re d'Aragona*, 4 vols. (Milan: Hoepli, 1947-57), and the two-volume supplement (Verona: Valdonega, 1969). Among the many interesting astronomical and geographical works that Marinis lists in the 1947-57 publication, one should mention "Tabulae Celestium" by Giovanni Bianchini (2:29); "Italia illustrata" by Flavio Biondo, with a preface by Francesco Barbaro and a dedication to "Alphonsum Serenissimum Aragonorum Regem"

better knowledge of—and control over—the territory under its jurisdiction is shown by the reform of the *magistrature* (administrative authorities) and the renovation of the state apparatus. In 1444, the Regia Camera della Sommaria (Royal Chamber of Summary Justice) was set up, followed in 1447 by the Dogana delle Pecore (Livestock Duty Office) and in 1467 by a measure introduced by Alfonso's adopted son Ferrante concerning the establishment of land registers and the evaluation of landed property, "both our own domains and the properties of all Barons and the Church."<sup>10</sup> Alfonso and his successor Ferrante were also keen to promote investigations of conditions within the Naples kingdom. When Borso d'Este visited Naples in 1444 to conduct Alfonso's illegitimate daughter to Ferrara (where she was to marry Borso's brother, Lionello d'Este), the occasion was marked by the compilation of what has been called the "Descrizione della città di Napoli e statistica del Regno del 1444," which served as a sort of calling card that the new king of the Two Sicilies could present to the house of Este (though it is not clear who commissioned the work or why).<sup>11</sup> This document gave the king of Aragon his first opportunity to gauge the poverty of existing information relating to the vast territory he had conquered just one year earlier, and thus it became the starting point for a number of further studies. Obviously, more ambitious projects for territorial expansion—such as the Este's proposal that they and Alfonso take over the Duchy of Milan on the death of Filippo Maria Visconti—could not even be considered without a thorough knowledge of one's own kingdom.<sup>12</sup>

Even if little supports Blessich's claim that the 1444 "Descrizione" reveals that cartographers were already at work in the Aragonese court,<sup>13</sup> there is no doubt that Alfonso's reign marked the beginning of the process of territorial investigation, land surveying, and astronomical measurement that would be completed during the reign of Ferrante. As is well known, Aragonese Naples became a center of literary humanism; for example, Giovanni Pontano arrived in the city in 1448, Lorenzo Valla stayed there from 1443 to 1448, and Antonio Beccadelli, known as Il Panormita, was living at the Aragonese court at the time of his death. However, a much more interesting arrival from our point of view is that of Lorenzo Bonincontri of San Miniato. He went to the city in 1456 and stayed there until October 1475, when he moved to take up the chair of astronomy at the studio in Florence (after the city had annulled his sentence of exile). Although we do not know much about his Naples stay, it is clear that his astrological, astronomical, and cosmographical studies must have exerted a powerful influence—and not only in the fields of literary study and abstract speculation.<sup>14</sup> The military activities that he had engaged in as a young man continued to be an important part of his life in Naples during the reigns of both Alfonso and his son Fer-

rante. Grayson argues that "in all likelihood he held a military post of some importance"—as is borne out by some of Bonincontri's autobiographical notes.<sup>15</sup>

It is surprising that modern historians have yet to fully investigate or explain how the exact measurement of an arc of the meridian circle was, in all probability, either car-

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(2:30); "Geometria" by Thomas Bradwardine (2:35); "De situ orbis" by Pomponius Mela (2:106); and various copies of Ptolemy's "Geography," including the famous codex with text by Hugo Comminelli and maps drawn by Piero del Massaio, which is now in the BNF (MS. Lat. 4802) (2:40). The short exhibition catalog Maria Rosaria Vicenzo Romano et al., eds., *Cimeli di Napoli Aragonese* (Naples: Industria Tipografica Artistica, 1978), is also of some interest, though there is more material in the exhibition catalog *Libri a corte: Testi e immagini nella Napoli aragonese* (Naples: Paparo, 1997), which coincided with the XVI Congresso Internazionale di Storia della Corona d'Aragonese. A fine update on the extant material from the Aragonese library is to be found in Genaro Toscano, ed., *La Biblioteca Reale di Napoli al tempo della dinastia Aragonese/La Biblioteca Real de Nápoles en tiempos de la dinastia Aragonese*, exhibition catalog (Valencia: Generalitat Valenciana, 1998).

On the payment slips, see Nicola Barone, "Le cedole di tesoreria dell'Archivio di Stato di Napoli dall'anno 1460 al 1504," *Archivio Storico per le Province Napoletane* 9 (1884): 5–34, 205–48, 387–499, and 601–37 and 10 (1885): 5–47. Numerous such slips relating to geographical (or related) activities are mentioned in Michelangelo Schipa, "Una pianta topografica di Napoli del 1566," *Napoli nobilissima* 4 (1895): 161–66, republished with a rich survey of images in *Il Bollettino del Comune di Napoli* 4–6 (1913): VIII–XXI, and Aldo Blessich, *La geografia alla corte aragonese in Napoli: Notizie ed appunti* (Rome: E. Loescher, 1897), published simultaneously in *Napoli nobilissima* 6 (1897): 58–63 and 92–95.

10. A library that is extraordinarily rich in material relating to all aspects of southern Italy, the Biblioteca della Società Napoletana di Storia Patria contains a manuscript copy of this edict (MS. XXI C 9, fol. 24–27) dated 29 November 1467, in which one can read the following: "And we expressly order for all the single cities, estates, castles, and places of each province—be they our property or that of any baron or cleric—that, under pain of a one-thousand-ducat fine, orders be given for these things to be carried out, with six faithful and honest men in each of the places of the said provinces." However, it does not seem that the drawing up of maps or physical land surveys was envisaged.

11. See Cesare Foucard, "Fonti di storia napoletana nell'Archivio di Stato di Modena," *Archivio Storico per le Province Napoletane* 2 (1877): 726–57, including the "Descrizione della città di Napoli e statistica del Regno del 1444," 731–57.

12. See Cesare Foucard, "Proposta fatta dalla corte estense ad Alfonso I re di Napoli (1445)," *Archivio Storico per le Province Napoletane* 4 (1879): 689–707.

13. See Blessich, *La geografia alla corte aragonese in Napoli*, 17, where, with regard to the 1444 "Descrizione" the author notes: "Almost like a text with its atlas, this fits very well indeed with those fine geographical parchments [of Aragonese Naples] that Galiani discovered during his time in Paris." However, as we shall see, the maps contain a density of information that is missing from the much more succinct "Descrizione."

14. An ample biography, paying particular attention to his literary output, is in Benedetto Soldati, *La poesia astrologica nel Quattrocento: Ricerche e studi* (Florence: Sansoni, 1906), 105–98.

15. Cecil Grayson, "Bonincontri, Lorenzo," in *Dizionario Biografico degli Italiani* (Rome: Istituto della Enciclopedia Italiana, 1960–), 12: 209–11, esp. 209. See also Blessich, *La geografia alla corte aragonese in Napoli*, esp. 21–25.

ried out or confirmed during the reign of Ferrante of Aragon (a monarch who, in 1480, also established a uniform system of weights and measures for the entire kingdom). It is worth raising this question because, as we shall see, in Aragon-ruled Naples, astronomy and cartography proceeded hand in hand, and both reveal that the kingdom was home to expert theoreticians and practical scientists.

According to Carlo Afan de Rivera, a nineteenth-century army engineer who made a thorough study of the metrics that applied in the kingdom of Naples, the basic unit of measurement for linear distance was the mile, equal to one-sixtieth of one degree of latitude; submultiples thereof were the *catena* and the *passo*, equal to one-hundredth and one-thousandth of a mile, respectively.<sup>16</sup> In turn, the *passo* was divided into seven *palmi*, so seven thousand *palmi* made up one geographical mile. Right up until the nineteenth century, the Officina di Pesi e Misure (Weights and Measures Office) in the Castelcapuano in Naples contained a sample measure for this old *palmi*, and it was on this sample—measuring a total of four *palmi*—that a special commission carried out a number of intricate measurements in 1811 in order to establish the exact relation between the old Neapolitan system and the new French metric system of measurement.<sup>17</sup> Their results showed that the old Aragonese *palmi* differed by only 1/229 from that which might be deduced from the measurement of the arc of latitude between Dunkirk and Barcelona made by the French astronomers Pierre-François-André Méchain and Jean-Baptiste-Joseph Delambre in 1792, which served as the basis for the decimal metric system.<sup>18</sup> While the old *palmi* measured 263.77 millimeters, the one that could be deduced from the French astronomers' work measured 264.55 millimeters. Afan de Rivera declared that he was "amazed" by this agreement, adding, "One cannot consider a conformity that depends on the exact measurement of a meridian arc as being a mere lucky coincidence."<sup>19</sup> This mile of seven thousand *palmi*, equal to one-sixtieth of a degree on the meridian, would be used in Naples as the "sixty-per-degree mile" for more than three centuries and would be adjusted only in 1782, by Giovanni Antonio Rizzi Zannoni.<sup>20</sup>

This knowledge of the real size of the earth shows that a now sadly neglected body of unknown scientists was working in the Aragonese court in Naples a decade or so before Columbus set out on his voyage. It seems unlikely that such achievements could have been unknown to Paolo dal Pozzo Toscanelli, who had frequent contacts with Bonincontri between 1475 and 1479, after the latter's return to Florence,<sup>21</sup> or even to Columbus himself, who may well have had information regarding the Aragonese measurements of a degree of the meridian. Furthermore, the existence of these important astronomical observations—important both in themselves and for their influence on cartography—can be deduced from de-

tails in certain Aragonese maps that we know only indirectly, through copies made in Paris by Ferdinando Galiani in 1767.

We will discuss fully the authenticity and accuracy of the copies of the parchment maps produced in Aragonese Naples in the paragraphs that follow (with an account of our present state of knowledge regarding these works). I would like to point out an interesting astronomical annotation that occurs on one of these parchments—a value for the latitude of Capo Spartivento—as a clear indication of the degree of refinement and accuracy achieved in both measurement and methodology. The calculation of latitude was made using the tables for the declination of the

16. "To this purpose [the Aragonese scientists] laid down that a mile must be equivalent to the arc of one minute of a degree of meridian. And be the equal of one thousand *passi* or seven thousand *palmi*." See Carlo Afan de Rivera, *Della restituzione del nostro sistema di misure pesi e monete alla sua antica perfezione*, 2d ed. (Naples: Dalla Stamperia e Cartiera del Fibreno, 1840), 20, and idem, *Tavole di riduzione de' pesi e delle misure della Sicilia Citeriore in quelli statuiti dalla legge de' 6 aprile del 1840* (Naples: Dalla Stamperia e Cartiera del Fibreno, 1840), 7.

17. Saverio Scrofani, *Memoria su le misure e pesi d'Italia, in confronto col sistema metrico francese* (Naples: Monitore delle Due Sicilie, 1812), 61–64. See also the further observations made in Ferdinando Visconti, *Del sistema metrico uniforme che meglio si conviene a' dominj al di qua del Faro del Regno delle Due Sicilie* (Naples: Stamperia Reale, 1829), esp. 5–14, also printed in *Atti della Reale Accademia delle Scienze, sezione della Società Reale Borbonica*, 6 vols. (Naples, 1819–51), 3:77–142.

18. J. B. J. [Jean-Baptiste-Joseph] Delambre, *Grandeur et figure de la terre: Ouvrage augmenté de notes, de cartes*, ed. Guillaume Bigourdan (Paris: Gauthier-Villars, 1912), 199ff.

19. Afan de Rivera, *Della restituzione del nostro sistema di misure*, 59. However, it should be pointed out that before measuring the *palmi*, the 1811 committee carried out numerous investigations "to find out what had determined its length at the beginning"; but they reported that however much "we may have examined with great diligence the most famous archives in the kingdom," no trace was found of its origin (Scrofani, *Memoria su le misure e pesi d'Italia*, 62). The 1480 decrees of Ferdinand of Aragon, published in 1787 by Melchiorre Delfico and then included in an appendix by Afan de Rivera (pp. 401–9), are concerned with uniformity in weights and measures ("The said measures and weights must be equal to the weights and measures in the city of Naples, so that weights and measures throughout the kingdom are the same," p. 401) and with the various standards thereof to be distributed throughout the realm. Afan de Rivera was the first to see a relation between the effective length of a *palmi* and the measurement of an arc of meridian by Aragonese astronomers; his hypothesis was then taken up by Luigi Vannicelli Casoni in *Compendio dei ragguagli delle diverse misure agrarie locali dello Stato Pontificio* (Rome, 1850), v and 176.

20. See Vladimiro Valerio, *Società uomini e istituzioni cartografiche nel Mezzogiorno d'Italia* (Florence: Istituto Geografico Militare, 1993), 135–36.

21. The meeting between the two scientists took place a year after Toscanelli sent his famous letter to the priest Fernand Martins of Lisbon (25 June 1474). On Toscanelli's measurement of the earth, see Leonardo Rombai, *Alle origini della cartografia Toscana: Il sapere geografico nella Firenze del '400* (Florence: Istituto Interfacoltà di Geografia, 1992), 65–67. Nevertheless, the whole question should be reviewed bearing these new considerations in mind.

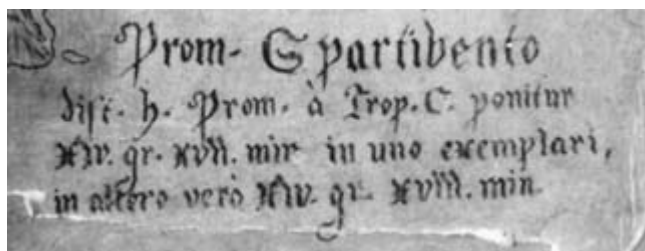


FIG. 37.2. DETAIL OF A MAP OF CALABRIA (EIGHTEENTH-CENTURY COPY). This inscription alongside Capo Spartivento in Calabria proves that Aragonese cartographers used astronomical observations to establish the coordinates of at least some of the places in the kingdom. The latitude of the cape is given as  $14^{\circ}17'$  or, according to another Aragonese map,  $14^{\circ}18'$  above the Tropic of Cancer. Size of the entire original:  $93.4 \times 65.5$  cm. Permission courtesy of the ASN (Piante e disegni, folder XXXI, 20). Photograph courtesy of Vladimiro Valerio.

sun, a procedure that was quite well known in the Middle Ages; in fact, as one can see from numerous thirteenth- and fourteenth-century texts relating to astronomy or navigation, the formulas to be applied were common knowledge among scientists and navigators.<sup>22</sup> However, rather than the latitude, the Neapolitan astronomers gave “the distance of this promontory from the Tropic of Cancer” (fig. 37.2)<sup>23</sup>—a ploy that meant observational error was not compounded by the errors contained in the tables of solar declination.<sup>24</sup>

The inclination of the ecliptic could be estimated to a high degree of accuracy using a method already outlined by Ptolemy in his *Almagest*.<sup>25</sup> The given latitude for Capo Spartivento ( $14^{\circ}17'$  or  $14^{\circ}18'$ ) is surprisingly accurate if one takes the inclination of the ecliptic =  $23^{\circ}33'$ , the value ascertained in the last quarter of the fifteenth century.<sup>26</sup> In effect, the given reading of  $37^{\circ}51'$  ( $14^{\circ}18' + 23^{\circ}33'$ ) measures up very well against the actual  $37^{\circ}55'$ , making this by far the most accurate reading of latitude taken in Calabria before the end of the eighteenth century. It is regrettable that there are no other Aragonese maps to give us readings for the latitude—and perhaps longitude—of other important places in the kingdom of Naples.<sup>27</sup>

Another striking feat of topographical measurement concerns the Isthmus of Squillace in Calabria; however, we cannot properly evaluate its accuracy because we do not know which “mile” the Aragonese geodesists were using when giving the width of the narrow stretch of land between the Ionian and the Tyrrhenian Seas as “19 miles.”<sup>28</sup> Given the presence of mountain ranges, the task of measurement was no easy one and could have been carried out effectively only using careful triangulation. Another surprising indication of the developed state of land surveying techniques during the period is the project for a canal to run through Calabria and link the Ionian and the Tyrrhenian Seas (we know that this was indi-

cated in a parchment map produced in Aragonese Naples because it is mentioned in a 1767 letter by Ferdinando Galiani).<sup>29</sup> So, under Aragonese rule, topography not only served for administrative and military control over territory but was also employed as an essential tool for the large-scale infrastructural projects that the kingdom needed so badly to undertake.

### THE ENIGMA OF THE ARAGONESE PARCHMENTS (*PERGAMENE ARAGONESI*)

Our earliest source with regard to parchment (vellum) geographical maps produced in Aragonese Naples is Ferdinando Galiani, secretary to the Neapolitan ambassador in Paris, where in 1767 he had the opportunity to con-

22. On practical astronomical knowledge and the methods used in determining latitude, see the two fundamental essays by Luís de Albuquerque, “Astronomical Navigation” and “Instruments for Measuring Altitude and the Art of Navigation,” both in Armando Cortesão’s *History of Portuguese Cartography*, 2 vols. (Coimbra: Junta de Investigações do Ultramar-Lisboa, 1969–71), 2:221–357 and 359–442 respectively. On latitude and longitude in the Middle Ages, see John Kirtland Wright, “Notes on the Knowledge of Latitudes and Longitudes in the Middle Ages,” *Isis* 5 (1923): 75–98, esp. 78–80.

23. “The distance of this promontory from the Tropic of Cancer is given in one version as  $14^{\circ}17'$ , in another as  $14^{\circ}18'$ ,” reads a note written on the “Gran carta della Calabria Meridionale” now in the ASN (Piante e disegni, folder XXXI, 20). This is an observation dictated by Ferdinando Galiani in 1767 (it refers to the variations in measurement contained in two of the sheets recopied in that year).

24. See chapter 20 in this volume.

25. Ptolemy, *Almagest* 1.12; see Ptolemy’s *Almagest*, trans. and anno. G. J. Toomer (1984; Princeton: Princeton University Press, 1998), 61–63, with the illustrations and notes to Ptolemy’s text. This method was also used by Pytheas for observation of the latitude of Marseille; see Germaine Aujac and the editors, “The Growth of an Empirical Cartography in Hellenistic Greece,” in *HC* 1:148–60, esp. 150–51.

26. See Albuquerque, “Astronomical Navigation,” 319: “At the time of the Discoveries the accepted value was  $23^{\circ}33'$ .”

27. The comment in Blessich, *La geografia alla corte aragonese in Napoli*, 23–24, concerning the latitude of Naples given in the *Tabulae astronomicae*, which were drawn up by Bonincontri, together with Camillo Leonardi, around 1480, is unfortunately inexact. I have examined the Latin codex concerned (n. 408 in Modena, Biblioteca Estense [a.F.6,18],103a–116b) with some care. On the same work, see Soldati, *La poesia astrologica*, 136.

28. The measure of the isthmus is described in these terms in the map of Calabria in the ASN (Piante e disegni, folder XXXI, 15): “Exact measurement 19 miles of 40 to the degree and 4 Roman *piedi* of the *passo capitolino*.” If one takes the Roman mile of 1000 *passi* to be equal to 1489.479 meters (Angelo Martini, *Manuale di metrologia, ossia, misura, pesi e monete in uso attualmente e anticamente presso tutti i popoli* [Turin: Loescher, 1883], 596), one gets a value of 28,291 meters; if one uses the Neapolitan mile, equal to 1845.69 meters (Vannicelli Casoni, *Compendio dei ragguagli*, 196), one gets a value of 35,068 meters, which is very close to the real value of about 34,500 meters.

29. “Among the curious things I have noted in them [the parchments], I do not want to hide from you a magnificent idea that I found mentioned there. This was a canal in Calabria, which leads from one sea to the other. The channel would be cut from just below Cetraro and run as far as a

sult parchment maps conserved in the archives of the military depot at Versailles. “I have found a treasure trove,” he wrote to Neapolitan minister Bernardo Tanucci on 6 April 1767. “In a guarded location here there are not a few remains of the geographical maps which, as far as I can tell, our old kings had made of the Kingdom of Naples, and which were most likely brought here by Charles VIII. . . . They form a truly interesting and useful monument. They are on parchment with a script in characters that are almost Longobard [Lombard]. One can see places that no longer exist, and those that were founded later are missing.”<sup>30</sup> However, since this description, no trace of the precious original parchments has emerged, in spite of painstaking research by some of the most attentive scholars of Neapolitan cartography (including Aldo Blesich and Roberto Almagià). The full story of these maps has been put together only recently, thanks to a careful study of Galiani’s correspondence and the comparisons that I have been able to make between certain copies of those maps (in Paris and Naples) and four previously unpublished parchments (probably sixteenth- or seventeenth-century copies of earlier maps)—even if the latter raise more questions than they answer.

The eighteenth-century copies on paper were made in Paris directly from the original parchments, and Galiani gave a full account of the copying procedure in his correspondence with Tanucci. We know that the copying took place under his direct supervision, because “the ink of those parchments had faded so much that the young draftsmen showed reluctance to trust their own eyes; I had to have them make the copies while I looked on.”<sup>31</sup> Similarly, we know that two sets of copies were made: one to be sent to Naples, the other “to be kept here [in Paris] in case some misfortune befalls those that are sent.”<sup>32</sup> All in all, there are thirteen reproductions, six in the state archives in Naples and seven in the BNF (fig. 37.3).<sup>33</sup> On the basis of these, we can draw some conclusions about the work of cartographers at the Aragonese court. The fact that these are copies means, of course, that the evidence they offer must be treated with all due caution, even if we know that the transfer to paper was carried out as faithfully as possible: Galiani tells us that “with great patience and care they had to soften and extend the parchments, tone up the ink, retrace lines where almost totally faded, and then carefully and painstakingly make a tracing copy on transparent oiled paper in order to make a copy that was as close to the original as possible, maintaining even the form of the old inscriptions.”<sup>34</sup> So the only variations were in the assembly of the parchments (in some cases one large copy covered the area of several parchments that had been joined together), but no changes were made to their geographical information or textual inscriptions; however, we have no way of knowing how faithful the copies are with regard to color and

the draftsmanship of certain details. One interesting point that emerges from the copies is the presence of an almost uniform scale in each of the maps. I have analyzed the scale by measuring the distances between cities, promontories, and other noteworthy geographical features, which, it seems fair to assume, were correctly rendered in the copying. The results show that, on single sheets, the average variation in scale is between 10 and 15 percent.

These percentages are true for all the maps that have survived, and therefore permit us to argue that the Aragonese maps were drawn to scale—that is, with the precise aim of producing images that offer an unvarying proportional rendition of the real world. This is very interesting because, apart from architectural drawings and a few rare examples of urban ground plans, there are no works of fifteenth-century cartography so clearly concerned with producing a representation of a large area of territory to an unvarying scale. The cartographers of Aragonese Naples clearly had no doubts that the real world around us can be dominated by means of a metrically faithful image thereof. It is useful and pertinent here to make reference to the Renaissance theory of perspective outlined in Leon Battista Alberti’s *De pictura* of 1435, in which the architect argued for a similar type of measurability in visual space (which could therefore be rendered metrically legible when transferred to a flat surface).<sup>35</sup> Cartography and perspective painting revealed the same

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river called the Falone [Follone]; this should then run into the Crati, which would thus become navigable, and thence one would come out where the ancient Sibari stood”; see the letter from Galiani to Tanucci dated 2 February 1767, quoted in Bernardo Tanucci, *Lettere a Ferdinando Galiani*, 2 vols., ed. Fausto Nicolini (Bari: Laterza, 1914), 2:60. There is also an interesting reply from Tanucci, who perceptively observed: “The Cedrato Canal would save those of Puglia a great deal, but would cut across too much of Calabria”—cities and towns such as Pizzo, Tropea, Reggio, and Crotona would be cut off from trade routes—and, Tanucci comments, “I do not know what would become of them” (2:60–61).

30. Tanucci, *Lettere*, 2:60. A fairly detailed list of the Aragonese maps still to be found in the *Dépôt de la Guerre* is given in Galiani’s letters. The first parchments were discovered in March 1767; a summary of the correspondence between Galiani and Tanucci regarding the discovery of the maps can be found in Valerio, *Società uomini*, 38–39 n. 27.

31. See the letter from Galiani to Tanucci, Paris, 1 June 1767, which is given in Augusto Bazzoni, ed., “Carteggio dell’abate Ferdinando Galiani col Marchese Tanucci (1759–1769),” *Archivio Storico Italiano*, 3d ser. 9, no. 2 (1869): 10–36; 10, no. 1 (1869): 40–57; 20 (1874): 345–53; 21 (1875): 516–27; 22 (1875): 37–51 and 416–27; 23 (1876): 242–52; 24 (1876): 32–46 and 243–54; 25 (1877): 195–207; 26 (1877): 26–42; 4th ser. 1 (1878): 14–31 and 445–59; 2 (1878): 23–31 and 365–74; 3 (1879): 171–83; 4 (1879): 35–43 and 361–75; and 5 (1880): 187–200 and 367–75; the letter is in 4th ser. 2 (1878), p. 370.

32. See Tanucci, *Lettere*, 2:144.

33. For a detailed description of the maps still preserved in Paris and Naples, see Valerio, *Società uomini*, 36–37 nn. 20–21.

34. See Tanucci, *Lettere*, 2:144.

35. Leon Battista Alberti, *De pictura*, ed. Cecil Grayson (Bari: Laterza, 1980), bk. 1, pp. 6, 7, 8, 13, 19, and 20.



FIG. 37.3. INDEX OF THE COPIES MADE BY FERDINANDO GALIANI IN PARIS OF THE ARAGONESE MAPS. These maps are now divided between the ASN (letters a–f) and the BNF (numbers 1–7). Graphic indexing of the sheets reveals that there was a counterclockwise shift in geographic north of about 7°; this was due to the use of a magnetic compass in taking topographical measurements. The base used for this graphic indexing was the map of the kingdom of Naples drawn in Paris under the direction of Ferdinando Galiani in 1769. Based on Vladimiro Valerio, *Società uomini e istituzioni cartografiche nel Mezzogiorno d'Italia* (Florence: Istituto Geografico Militare, 1993), 35.

cognitive approach to the world, applying instruments that were technically different and yet were based on the same assumptions. And it should be noted that during the same years orthogonal projection—what one might call a bird's-eye or perspective view from above—also made its appearance in artists' drawings in the diagrams Piero della Francesca produced for his *De prospectiva pingendi*.<sup>36</sup>

The homogeneity of scales on the copies means that we can form a reliable single picture by joining all the surviving sheets together, thus revealing another surprising technical feature: the orientation of most of the cartographic representations shows that a compass was used in the work of topography or, at the very least, in deciding the general orientation of individual maps.<sup>37</sup> The compass is known to have been used in medieval nautical cartography (where ignorance of the effects of magnetic declina-

tion produced the well-known counterclockwise shift in the axis of the Mediterranean), but here we see that this strictly nautical instrument was being used extensively for another important task. Although Alberti had applied it experimentally in his mapping of Rome around 1440,<sup>38</sup> the cartographers of Aragonese Naples used it to map an entire kingdom. The almost unchanging angle of rotation in the sheets aligned along the central meridian, which runs from Capitanata to Calabria, reveals a declination of 7° west, which would be about right for the years in which the cartographers carried out their surveys.<sup>39</sup>

Maccagni has expressed doubt that compasses were used at this date for topographical surveys, pointing out that the nautical compasses that have come down to us are all unsuitable for such a purpose.<sup>40</sup> But it is in no way certain that nautical compasses were the only goniometric instruments in use at the time. Graded circles, for example, which were known to the ancient Greeks and were described by Ptolemy, made it possible to take highly accurate angular readings on land. Nor is the fact that no topographical compass has come down to us really conclusive proof, especially when we consider that the 1294

36. Piero della Francesca, *De prospectiva pingendi*, ed. Giusta Nicco Fasola (Florence: Sansoni, 1942).

37. The base I used as a frame of reference when arranging the sheets is the map of Sicilia Prima produced in Paris in 1769 by Galiani and Giovanni Antonio Rizzi Zannoni. The reason is that this map uses information taken from the Aragonese parchments and therefore makes it easier to make out which portions of territory were covered by those earlier maps.

38. On the basis of information given in "Descriptio urbis Romae," Luigi Vagnetti has produced an interesting reconstruction of the map of Rome, which reveals the validity of Alberti's method. See Luigi Vagnetti, "La 'Descriptio urbis Romae': Uno scritto poco noto di Leon Battista Alberti (contributo alla storia del rilevamento architettonico e topografico)," *Quaderno* (Università degli Studi di Genova, Facoltà di Architettura, Istituto di Elementi di Architettura e Rilievo dei Monumenti) 1 (1968): 25–79, and idem, "Lo studio di Roma negli scritti Albertiani," in *Convegno Internazionale indetto nel V Centenario di Leon Battista Alberti* (Rome: Accademia Nazionale dei Lincei, 1974), 73–140, on 111–37 of which are the Latin text and the Italian translation of the "Descriptio urbis Romae," edited by Giovanni Orlandi. Alberti's method has recently been revisited; see Leon Battista Alberti, *Descriptio urbis Romae: Édition critique, traduction et commentaire*, ed. Martine Furno and Mario Carpo (Geneva: Droz, 2000).

39. According to the data given in L. Hongre, G. Hulot, and A. Khokhlov, "An Analysis of the Geomagnetic Field over the Past 2000 Years," *Physics of the Earth and Planetary Interiors* 106 (1998): 311–35, magnetic variation in Naples in the years 1450, 1475, and 1500 would have been 9.1°, 8.6°, and 8.3° east, respectively. The value I have been able to deduce from an inspection of the maps fits best with the period from 1475 to 1500. I thank Keith Pickering for calculating these values using the Geomag 3.0 program of the National Geophysical Data Center (communicated via e-mail 20 August 1998).

40. Carlo Maccagni, "Evoluzione delle procedure di rilevamento: fondamenti matematici e strumentazione," in *Cartografia e istituzioni in età moderna: Atti del Convegno Genova, Imperia, Albenga, Savona, La Spezia, 3–8 novembre 1986*, 2 vols. (Genoa: Società Ligure di Storia Patria, 1987), 1:43–57, esp. 54–55.



Mining Statutes of Massa Marittima are quite clear in their reference to the use of an instrument with a magnetized needle in determining land boundaries.<sup>41</sup>

Unfortunately, we know nothing about the cartographers who produced the original Aragonese parchment maps. However, we cannot help thinking that the project must in some way have involved Antonio De Ferraris, known as Il Galateo. Although to date there is no documentary or archival proof of his connection with a scheme for the topographical survey of the entire kingdom, he was a central figure among the geographers and cosmographers of the Aragonese court. What is more, his chorographical works, such as *Descriptio urbis Callipolis* and *De situ Yapigiaie*, may have been produced quite late in his life (between 1511 and 1513), but they give as a starting point information gleaned from ancient writers, which is then checked through careful personal investigation, thus revealing an antiquarian eye for archaeological detail that, as we shall see, is a feature of the Aragonese parchments.<sup>42</sup>

An inscription on one of the maps of Calabria copied by Galiani informs us that “the homeland of the author of this map”<sup>43</sup> was the city of Taverna, which was a flourishing center of humanism during the fifteenth and sixteenth centuries.<sup>44</sup> Although this information does not help us give a name to the cartographer, it certainly supports the thesis that at least some local figures were involved in the difficult task of carrying out topographical surveys and then drawing up the actual maps themselves.

Quite apart from the numerical data contained therein, the copies of the maps of Aragonese Naples seem to reveal, more than any other cartographic works of the same period, the renewed interest in landscape and nature that was a characteristic feature throughout Italian Renaissance humanism.<sup>45</sup> As Burckhardt comments in his work on the civilization of the Renaissance in Italy: “Outside the sphere of scientific investigation, there is another way to draw near to nature. The Italians are the first among modern peoples by whom the outward world was seen and felt as something beautiful.”<sup>46</sup>

During the period of humanism, a more variegated relationship with landscape emerged and developed. The natural world was no longer the indifferent backdrop to human actions, but was “a vital setting for mankind . . . compounded with the life of man.”<sup>47</sup> The Aragonese maps are thoroughly imbued with this new relationship between man and his environment; similarly, the humanist spirit is quite clear in the interest the maps reflect in the history of places and the care with which their makers recorded the remains of ancient buildings, towers, castles, and all other vestiges of the past. And though there is an almost inevitable repetition in certain symbols, one can make out attempts to differentiate between them: for example, the mountains are shown using a parallel perspective that anticipates the orography of the seventeenth and eighteenth

centuries.<sup>48</sup> The pictorial, or naturalistic, method that Leonardo da Vinci used in his depiction of mountains is echoed in these maps. Surrounded by the aura of genius, Leonardo’s cartographic works are often considered out of all precise historical context, and yet here we can see the close relation between his work and the advanced cartography being produced for the Aragonese court in Naples. Almagià’s claim that Leonardo’s maps are “undoubtedly

41. On the magnetic compass and its uses, see Giuseppe Boffito, *Gli strumenti della Scienza e la Scienza degli strumenti* (Florence, 1929; reprinted Rome: Multigrafica Editrice, 1982), 54–61, and Timoteo Bertelli, “Appunti storici intorno all’uso topografico ed astronomico della bussola,” *Rivista Geografica Italiana* 7 (1900): 65–108.

42. On Galateo, see Aldo Blessich, “Le carte geografiche di Antonio de Ferraris detto il Galateo,” *Rivista Geografica Italiana* 3 (1896): 446–52, and Blessich, *La geografia alla corte aragonese in Napoli*, both of which also contain information on the other cartographers and cosmographers active in Aragonese Naples (Luca Gaurico, Marco Beneventano, and Bernardo Silvano).

43. This appears written in the map of northern Calabria (ASN, Piante e disegni, folder XXXI, 15) alongside the city of Taverna (now called Taverna).

44. The city was razed to the ground by Francesco Sforza in 1426 and then rebuilt by the Aragonese crown, but slightly to the west.

45. For the contemporary works elsewhere in Italy and beyond, see François de Dainville, “Cartes et contestations au XV<sup>e</sup> siècle,” *Imago Mundi* 24 (1970): 99–121, which examines the rare fifteenth-century French maps; P. D. A. Harvey, *The History of Topographical Maps: Symbols, Pictures and Surveys* (London: Thames and Hudson, 1980), 84–103, which discusses examples from the middle European and Anglo-Saxon world; and idem, *Medieval Maps* (London: British Library, 1991), which, in spite of the title, carries the discussion right up to the first years of the sixteenth century. The situation in Italy is still largely virgin territory, but see Roberto Almagià, *Monumenta Italiae cartographica* (Florence: Istituto Geografico Militare, 1929; reprinted, with an introduction by Lucio Gambi, Bologna: Forni, 1980). There is no significant new material in the anonymous maps drawn in Piedmont around 1420 that are reproduced in Giovanni Romano, *Studi sul paesaggio* (Turin: Einaudi, 1978), figs. 14 and 15.

46. Jacob Burckhardt, *The Civilization of the Renaissance in Italy*, 3d ed., [trans. S. G. C. Middlemore] (London: Phaidon, 1995), 190–91.

47. Eugenio Turri, *Antropologia del paesaggio*, 2d ed. (Milan: Edizioni di Comunità, 1983), 60. On the pictorial image of landscape, see Romano’s classic, pioneering work *Studi sul paesaggio*, especially the first of the two essays (pp. 3–91).

48. Dainville comments: “Medieval manuscript maps had left modern cartographers two modes of expression. The first consisted in using an ochre-sepia color to indicate the area of mountains. The second consisted in using a sort of sawtooth or coxcomb symbol to indicate their presence”; see François de Dainville, *Le langage des géographes: Termes, signes, couleurs des cartes anciennes, 1500–1800* (Paris: A. et J. Picard, 1964), 167. He then goes on to say that the first mountains “which deserve to be looked at as such date from no earlier than the seventeenth century” (p. 168). In effect, Galiani had himself realized that “the said maps are so well made, the mountains, rivers, and plains are so well indicated, that you wouldn’t do much better nowadays” (Tanucci, *Lettere*, 2:60). A good summary of the cartographic depiction of mountains over the ages is to be found in *Images de la montagne: De l’artiste cartographe à l’ordinateur*, exhibition catalog (Paris: Bibliothèque Nationale, 1984). It is interesting to note that there is no representation of mountains dating from the fourteenth century.



FIG. 37.4. DETAIL OF NORTHERN CALABRIA (EIGHTEENTH-CENTURY COPY). Aragonese maps paid particular attention to economic features and to indications of human activity: the valleys of farming land are shown with dashed lines, the woods with a small stylized tree, and the coastal scrubland with another equally efficient symbol. Such important economic activities as the saltworks also find a place on the map. The rendering of relief is more pictorial and descriptive: light falls left to right across the sheet, casting shadows on the right sides of the mountains.

Size of the entire original: 41.3 × 56.1 cm. Permission courtesy of the ASN (Piante e disegni, folder XXXI, 15). Photograph courtesy of Vladimiro Valerio.

superior to any other [cartographic] product of the day”<sup>49</sup> is justified only in view of what little knowledge there was of humanist cartography in Italy in the recent past. The Aragonese maps unfailingly reveal the results of on-site inspections, with the identity of places immediately recognizable: the cultivated valley areas are indicated with lines that show the presence of fields, and there are also indications of important economic activities (figs. 37.4 and 37.5).

It has quite correctly been observed that “the objective portrayal of nature or of the feelings that might be stirred by the natural world was a task that medieval authors/artists did not set themselves.”<sup>50</sup> And perhaps one should start viewing humanist cartography as clearly distinct from the medieval cartography with which, even in recent studies, it is so often lumped together (either because of



FIG. 37.5. DETAIL OF A MAP OF THE CILENTO REGION (EIGHTEENTH-CENTURY COPY). Urban fabric was as carefully rendered as the natural landscape. This rendering of the city of Agropoli shows the irregular city walls and some hills topped by a fortress and some bell towers.

Size of the entire original: 51.2 × 122 cm. Permission courtesy of the ASN (Piante e disegni, folder XXXII, 2). Photograph courtesy of Vladimiro Valerio.

academic traditions or because of the scarcity of existing documents).<sup>51</sup> As Zeri has said, “The discovery of laws

49. Roberto Almagià, “Leonardo da Vinci geografo e cartografo,” in *Atti del Convegno di Studi Vinciani: Indetto dalla Unione regionale della province toscane e dalle Università di Firenze, Pisa e Siena* (Florence: Olschki, 1953), 451–66. On the cartographic work of Leonardo, see also the discussion in Leonardo Rombai, “La nascita e lo sviluppo della cartografia a Firenze e nella Toscana granducale,” in *Imago et descriptio Tusciae: La Toscana nelle geocartografia dal XV al XIX secolo*, ed. Leonardo Rombai (Venice: Marsilio, 1993), 83–159, esp. 86–91.

50. Olschki, *Storia letteraria*, 133.

51. See the chapter by P. D. A. Harvey, “Local and Regional Cartography in Medieval Europe,” in *HC* 1:464–501, which discusses “all terrestrial maps from medieval Christendom that are neither world maps nor portolan charts nor the rediscovered maps of Ptolemy” (p. 464). The writer is aware of the limited nature of the material currently available and observes that “future discoveries may radically



FIG. 37.6. DETAIL OF A PARCHMENT SHOWING THE GARGANO PROMONTORY (SIXTEENTH- OR SEVENTEENTH-CENTURY COPY). Coastlines, coastal hill formations, and centers of habitation were all carefully indicated in these copies of Aragonese maps. The place-name “Valle delli Umbri” still survives in the name of the Foresta Umbra Nature Reserve.

Size of the entire original: ca. 36 × 40 cm (irregular). Permission courtesy of the ASN (Archivio Farnese 2114/4). Photograph courtesy of Vladimiro Valerio.

that made it possible to transfer onto a flat surface a reproduction of objective reality as perceived by the eye obviously opened up an enormous range of possibilities,”<sup>52</sup> and, as we have already seen, those included cartographic representations.

All of the preceding observations concerning Galiani’s eighteenth-century copies are borne out by the four parchment maps that have recently been discovered in the state archives in Naples. Unfortunately, close examination reveals that these maps are themselves copies of much earlier works. It is the handwriting that gives the copyist away; he had to struggle to imitate fifteenth-century Gothic script. Though difficult to establish with certainty, the date of the extant works probably lies between the sixteenth and seventeenth centuries.<sup>53</sup> The use of Gothic script in the original Aragonese documents is a clear indication that the works aimed for a certain air of solemnity. And its role as an imposing feature becomes all the more evident when it is noted that humanist (roman) script was widely used at the Aragonese court, particularly during the reign of Alfonso.<sup>54</sup> Perhaps the mystery that hangs over the question of the parchment maps of the Aragonese court will finally be solved by a full study of these four maps,<sup>55</sup> which show the island of Ischia, a portion of the region of Campania, the lower part of the region of Latium, and the Gargano (fig. 37.6).<sup>56</sup>

Galiani’s letters of 1767 actually contain a reference to some of these parchments, mentioning a “beautiful map

change the picture” (p. 465). Interesting ideas on the new humanistic approach to the description of territory can be found in Lucio Gambi, “Per una rilettura di Biondo e Alberti, geografi,” in *Il Rinascimento nelle corti padane: Società e cultura* (Bari: De Donato, 1977), 259–75. This is centered more on the history of geography than on that of cartography yet does help us to understand the approach behind and procedures followed in Biondo’s “Italia illustrata.” The descriptions Gambi gives might well be applied to the Aragonese works: “Ruined or decaying cities alternate with those that have just recently been founded,” and the “antiquarian vision” that Biondo had absorbed from his study of the classics is mixed with a “humanist tendency . . . to study as from a raised vantage-point all the fields laid out for study” (pp. 262 and 263).

52. Federico Zeri, “La percezione visiva dell’Italia e degli italiani nella storia della pittura,” in *Storia d’Italia*, 6 vols. (Turin: Einaudi, 1972–76), 6:51–214, esp. 55.

53. I would like to thank Professor Armando Petrucci for giving me his assessment of the script on the parchments. Unfortunately, he had to work from photographs, and—as he himself points out—more exact comments would require direct examination of the parchments themselves. His conclusions were communicated by letter on 27 January 1998.

54. On the significance of “imposing script,” see Armando Petrucci, *La scrittura: Ideologia e rappresentazione* (Turin: Einaudi, 1986), xx, which has an original discussion of the political and social use of script as an element of visual communication as well as a transcription of written messages. On the changes in script during the medieval and early modern periods (up to the sixteenth century), see Robert Marichal, “Le scrittura,” in *Storia d’Italia*, 6 vols. (Turin: Einaudi, 1972–76), 5:1265–1317. There clearly seems to be a need for a full study of the use of script in manuscript cartography, even if a (slight) suggestion of the need to tackle this theme appeared in A. S. Osley, “Calligraphy—An Aid to Cartography?” *Imago Mundi* 24 (1970): 63–75. Though very perceptive in many areas, Woodward covers the passage from Gothic to humanist script in just a few lines, with no reference to the script in medieval nautical charts and chorographical maps. He does observe that humanist script is found “on several fifteenth- and sixteenth-century manuscript maps, such as the various versions of Leonardo Dati’s *La Sfera* and the manuscript maps of Battista Agnese”; see David Woodward, “The Manuscript, Engraved, and Typographic Traditions of Map Lettering,” in *Art and Cartography: Six Historical Essays*, ed. David Woodward (Chicago: University of Chicago Press 1987), 174–212, esp. 179. However, of all the examples he might have chosen, these two do not seem particularly relevant, because *La Sfera* is a book with cartographic illustrations and Battista Agnese’s work dates from the sixteenth century. The “Kartenschrift” entry in *Lexikon*, 1:389–94, is not of much greater help. For example, it is worth emphasizing that—as far as I have been able to discover—most of the nautical charts of the fourteenth and fifteenth centuries use Gothic script, which may indicate that such script was employed for all official purposes, or it may simply be due to the surviving influence of the visual appearance of earlier works. Whatever the explanation, from the sixteenth century onward, all nautical charts used roman script, and this can hardly be a mere coincidence.

55. During 1985 research into the map collections at the ASN, I was able to recognize that some of the parchments from the Farnese collection were the topographical maps described by Galiani. The director of the archive, Dr. Mariantonietta Martullo Arpago, and I decided to put off thorough study of these parchments until a later date, but so far neither of us has had the time necessary to return to the task.

56. The following is a brief summary of the four parchments from the Farnese Archive now in the ASN (Archivio Farnesiano, 2114, n.i 1, 2, 3, and 4), all of which are drawn in carmine ink: (1) map of the islands of Ischia and Procida, 28 × 42 cm, scale ca. 1:120,000; (2) map of the territory between Maddaloni and Nola, 32 × 29 cm, scale ca. 1:55,000; (3) map of Lower Latium (S. Germano, Venafro, Presenzano), 34 × 49 cm, scale ca. 1:120,000 (the ink has almost totally



FIG. 37.7. DETAIL OF A PARCHMENT DEPICTING THE REGION AROUND NOLA (SIXTEENTH- OR SEVENTEENTH-CENTURY COPY). Alongside the usual representation of a center of habitation, the city of Acerra—already an important agricultural center in Roman times—is here identified by a quote from Virgil’s *Georgics*, which refers to the detrimental effects of the river Clanio. Archaeological and historic interest is also revealed by the indication of a “Hannibal’s Tower, almost dilapidated.”

Size of the entire original: 32 × 29 cm. Permission courtesy of the ASN (Archivio Farnese 2114/2). Photograph courtesy of Vladimiro Valerio.

of Ischia,”<sup>57</sup> and that work is, in effect, quite an exceptional drawing: the outline is careful and accurate, and, even in the simplified rendition imposed by the reduced scale, there is still a place for symbols indicating a stretch of aqueduct and a watercourse running down to the northern coast of the island from Mount Epomeo. There is also a wealth of information on place-names, with many of them predating those that subsequently became established in the sixteenth century: for example, Punta Imperatore is called “Promontorio Cesareo” and Punta Cornacchia “Promontorio della Cornice.”<sup>58</sup> What is more, Monte Epomeo is for the first time referred to by the name that Strabo used *Ἐπωπέα* rather than by the traditional medieval name of San Nicola (like Ptolemy, Strabo had been “rediscovered” in Europe only in the fifteenth century).<sup>59</sup>

The influence of the classical world is clear at numerous points in the Aragonese parchments: for example, there is an interesting quote alongside the river Clanio, whose deleterious effects on the nearby city of Acerra are indicated by a famous passage from Virgil’s *Georgics*: “The Clanio is not favorable to Acerra” (fig. 37.7).<sup>60</sup> The antiquarian interests of the cartographers are also shown in the numerous indications of archaeological sites, including the ancient Suessula (“Sessola,” whose exact location is today unknown but might well be rediscovered thanks to this parchment map) and the Roman amphitheater of Nola, which was already unrecognizable as such in the days of Ambrogio Leone at the beginning of the sixteenth

century.<sup>61</sup> All this evidence—contents, place-names, cross-references with classical texts and sources—suggests the involvement of a Renaissance humanist in the creation of the maps, and the name that almost immediately comes to mind is that of Giovanni Pontano, an illustrious humanist who was an influential figure at the Aragonese court of Naples (which he represented on important diplomatic missions). As we will see, there is official confirmation of his involvement in the creation of the map showing the borders between the kingdom of Naples and the Papal States.

### THE MAP OF THE BORDERS OF THE KINGDOM AND THE LAST CARTOGRAPHIC WORKS OF THE PERIOD OF ARAGONESE RULE

We have rather more information about another work of cartography that originated in the Aragonese court—a map of the borders of the kingdom of Naples—which is again known to us through a later (eighteenth-century) copy in four sheets. Although it was brought to the attention of scholars as early as 1913 by Almagià, who studied it again in 1929, this map does not seem to have aroused great interest and is only occasionally mentioned in the literature.<sup>62</sup> The original work was discovered in the military depot in Versailles in 1767 and immediately attracted the

faded, making this map practically illegible); and (4) map of the promontory of the Gargano, 36 × 40 cm, scale ca. 1:150,000.

57. Letter of 1 June 1767, quoted in Bazzoni, “Carteggio dell’abate Ferdinando Galiani,” 4th ser. 2, p. 370.

58. Perhaps a mistaken transcription of *Cornice* is the basis of the change of the place-name to the Latin *Cornix*—that is, *Cornacchia* (crow). *Cornix* appears for the first time on the map of the island of Ischia by Giulio Iasolino, which was engraved by Mario Cartaro in 1586.

59. The first printed edition of the Latin translation of Strabo was produced in Rome in 1469 by Conrad Sweynheym and Arnold Pannartz; see Sebastiano Gentile, ed., *Firenze e la scoperta dell’America: Umanesimo e geografia nel ’400 Fiorentino* (Florence: Olschki, 1992), 187–88. A mention of Mount Epomeo also appears in Pliny: “So also the Monkey Islands are said to have risen in the bay of Campania, and later one among them, Mount Eposos, is said to have suddenly shot up a great flame”; see Pliny, *Natural History*, 10 vols., trans. H. Rackham et al. (Cambridge: Harvard University Press, 1938–63), 1:335 (2.203).

60. “The Clanios [River] infects the deserted Acerra”; see Virgil, *Georgics*, bk. 2, ll. 224–25. This same passage of Virgil’s is quoted by Flavio Biondo: “After Vulturno comes the river Clanio . . . which Virgil calls, ‘inimical to Acerra,’ because it then flooded the territory of Lacerra”; see *Roma restaurata, et Italia illustrata*, trans. Lucio Fauno (Venice, 1543), 229r.

61. Ambrogio Leone makes no mention of the amphitheatre in his work *De Nola* (Venice, 1514).

62. The only known copy is possessed by the Società Napoletana di Storia Patria (stampe cat. V, 229 A, B, C, and D); it is in four sheets measuring 31.0 × 54.6, 51.5 × 32.0, 32.6 × 54.5, and 53.2 × 31.5 cm. See Roberto Almagià, “Studi storici di cartografia napoletana,” *Archivio Storico per le Province Napoletane* 37 (1912): 564–92 and 38 (1913): 3–35, 318–48, 409–40, and 639–54; republished with additional

attention of Galiani, who communicated to Tanucci, “Finally the drawing and original measure of the boundaries of the kingdom has been found and is in my hands—bought and paid for.”<sup>63</sup> The full title he used in that confidential letter of 30 May 1768 was “Topographical plate of the borders taken from the Aragonese and papal documents that were conserved in the archive of Castel Sant’Angelo, by order of King Ferdinand, and measured in Capitoline feet. The work and study of Giovanni Gioviano Pontano,” which is a free translation of the Latin text on the copy.<sup>64</sup> The script and the symbols used are similar to those in the maps discussed earlier, and their stylistic continuity suggests that this map of the borders was not a single work but part of a continuing project. The original drawings can be dated with a degree of certainty at around 1492–93, given that in January 1492 a peace treaty was signed between Naples and the Papal States, with Pontano himself playing an important role in the negotiations.<sup>65</sup> The settlement involved the establishment of new borders, which, as we can see from the first sheet (fig. 37.8), “anciently” ran along the river Tronto, incorporating such cities as Ascoli and Ancarano in the kingdom of Naples. The contemporary usefulness of such a document to settle the border disputes that had gone on for centuries was also immediately clear to Galiani, who could not help but point out that in these maps the border was described “with such exactitude that it would be very easy to restore it in those places where there has been encroachment.”<sup>66</sup>

Here again we have a very carefully produced work of cartography to a constant scale (approximately 1:160,000). The stones and crosses placed by the surveyors to mark the borders are clearly shown, as are the rivers and the main centers of settlement, thus giving a reliable picture of those areas that were part of the kingdom and those that were outside it. This border map, together with the numerous partial surveys of the kingdom, would have been printed—or, at the very least, the essential information they contained would have found a place in the later printed maps of the Naples area—if they had not subsequently disappeared from circulation for something like three hundred years, stolen by Charles VIII after his victorious entry into the city of Naples on 22 February 1495. In fact, for a century after their disappearance, no overall or partial topographical surveys of the kingdom of Naples would be carried out.<sup>67</sup>

But these topographic works originating in the Aragonese court are not the only indication we have of the cultural and scientific interest in cartography and geography in the city. Although there is scarce documentation relating to this phenomenon, we do know that around 1490 Bernardo Silvano was running a workshop producing maps and codices, and that there were some other makers of nautical charts—all of which indicates wide-ranging interest and participation in the production of maps.

We know very little of the life and works of Bernardo Silvano from Eboli,<sup>68</sup> a small agricultural town in the Salerno area, but his name is indissolubly linked with Ptolemy’s

notes in Roberto Almagià, *Scritti geografici (1905–1957)* (Rome: Cremonese, 1961), 231–324, esp. 233 (this is the version and pagination used in this chapter); and again republished in Ernesto Mazzetti, ed., *Cartografia generale del Mezzogiorno e della Sicilia*, 2 vols. (Naples: Edizioni Scientifiche Italiane, 1972), 1:1–150. See also Almagià, *Monumenta Italiae cartographica*, 13 (which contains a more detailed description and bibliography, plus a reproduction of the four sheets in pl. XIII, no. 2). The maps were put on display at the cartography exhibition organized on the occasion of the XI Congresso Geografico Italiano, held in Naples in 1930; see *Atti dello XI Congresso Geografico*, 4 vols. (Naples, 1930), 4:324, no. 23. They were subsequently discussed in Leo Bagrow, *History of Cartography*, rev. and enl. R. A. Skelton, trans. D. L. Paisley, 2d ed. (Chicago: Precedent, 1985), 93, 94 (fig. 22), and 144–45, which lists them as “incunabula sheet maps” engraved in copper. The author suggests that “these maps, engraved in copper, may have been intended for his [Pontano’s] work *De bello neapolitano*, which was completed in 1494 and printed in 1508” (p. 145). Although inexact, this point has been taken up by other English writers. However, Tony Campbell, in *The Earliest Printed Maps, 1472–1500* (London: British Library 1987), 213–15, astutely includes these maps of the borders of the kingdom of Naples among the group of “untraceable maps or misleading descriptions.”

63. Letter from Galiani to Tanucci, Paris, 30 May 1768, published in Tanucci, *Lettere*, 2:212 n. 1. However, it should be pointed out that the copies now in the Società Napoletana di Storia Patria are not those commissioned by Galiani in Paris, because we know those were done “on oiled paper, otherwise the old and partially faded ink would not have shown through” (2:214 n. 1). The extant copies are on thick white paper.

64. Galiani interprets the *p* in the measurements given on the map to stand for *pedi*, for the letter is followed by the adjective *capitolini*, but it should be read as standing for *passi*. In fact, the last measurement given in the third map (stampe cat. V, 229 B; in the catalog, the order of the third and second maps is reversed, and they are labeled B and C, respectively) is written out in full as *alla croce vivara dcccii passi* (to the crossroads 802 *passi*). What is more, the scale given in the first map (1:18,000 *p*) would not be congruent if *p* was taken to stand for *pedi*, a measurement that was used only for architectural measurements and never for itineraries.

65. The peace between Naples and the Holy See was signed on 28 January 1492, when the throne of Saint Peter was occupied by Innocent VIII. See Ernesto Pontieri, “Venezia e il conflitto tra Innocenzo VIII e Ferrante I d’Aragona,” *Archivio Storico per le Province Napoletane*, 3d ser., 5–6 (1966–67): 1–272. Pointing out the title of the map, Harvey, in *Topographical Maps*, 62, notes that “there was a Ferdinand on the Neapolitan throne most of the time between 1458 and 1516” and shifts the date of the survey to “the end of this period for . . . it is based on a measured survey and is specifically drawn to scale.” However, this fails to take account of the fact that by then Pontano was dead, whereas his part in the survey is mentioned explicitly in the title (“studio et opera Joan. Jov. Pontan”). Hence, the year in which he died (1503) should be taken as marking a cut-off point when dating this map.

66. Letter from Galiani to Tanucci, Paris, 30 May 1768, published in Tanucci, *Lettere*, 2:212 n. 1.

67. On the vicissitudes of the books and codices from the Aragonese Library, see the recent catalog Toscano, *La Biblioteca Reale di Napoli*, 277–321.

68. There is an ample nonspecialist bibliography covering Bernardo Silvano that starts with the first interesting references to him in A. E. Nordenskiöld, *Facsimile-Atlas to the Early History of Cartography*, trans. Johan Adolf Ekelöf and Clements R. Markham (Stockholm: P. A. Norstedt, 1889; reprinted New York: Dover, 1973), 18–19 and 87–88. An up-to-

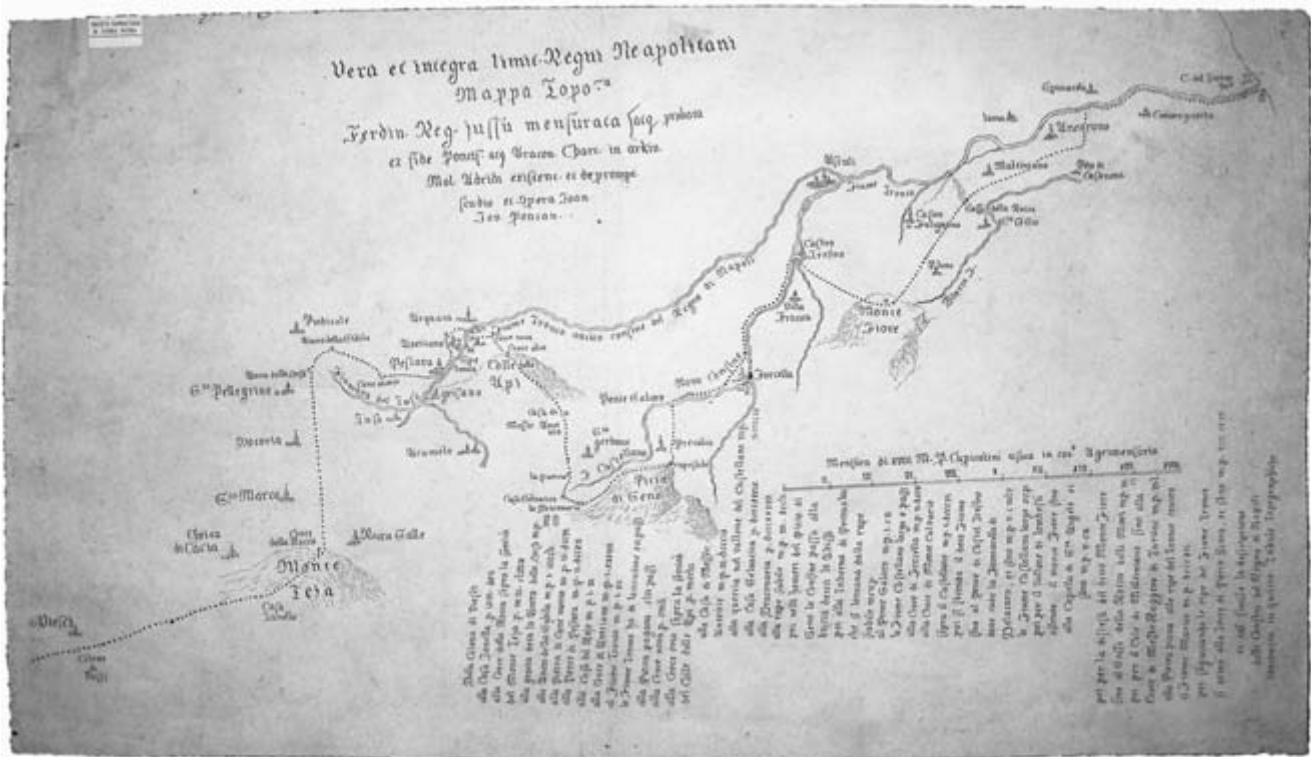


FIG. 37.8. MAP OF THE BORDERS OF THE KINGDOM OF NAPLES (EIGHTEENTH-CENTURY COPY). Peace between the kingdom of Naples and the Papal States was signed in February 1492, with a new border being established. This is depicted in the four parchment maps discovered in Paris in 1767.

There are paper copies of these, made in 1768. Size of the original: 31.0 × 54.6 cm. Photograph courtesy of the Società Napoletana di Storia Patria, Naples (print catalog V 229/A).

*Geography*. He seems to have been the first to amend Ptolemy’s text and maps, subjecting both to severe assessment through comparison with contemporary geographical knowledge. Silvano refused to take the coordinates as given in the *Geography* because they varied from codex to codex and from translation to translation; hence, he attempted to reconcile Ptolemy’s *Geography* with the more recent knowledge incorporated in contemporary nautical charts, and “he did know that Ptolemy[’s information] could be reconciled to all the reports from mariners.”<sup>69</sup>

For instance, Silvano changed the orientation of the Salentine Peninsula, the southeastern extremity of Puglia (Apulia), from the traditional Ptolemaic north-south alignment to a correct east-west alignment; on this specific matter, in fact, he took to task Marco Beneventano,<sup>70</sup> another renowned geographer and mathematician from southern Italy, who with Giovanni Cotta was responsible for the Roman edition of the *Geography* (1507). All in all, Silvano’s corrections marked a great improvement on previous editions with regard to both the coastline and the overall depiction of Italy (especially southern Italy).

Silvano’s numerous references to nautical charts, together with the great faith he put in them and the fact that he himself had been a mariner, support the claim that be-

tween the end of the fifteenth century and the beginning of the sixteenth, such cartography flourished in Naples (even if the documentary evidence for this is scant). There is documentary evidence that the Majorcan Arnaldo Domenech was in Naples in 1486, the year in which he produced a chart of the Mediterranean<sup>71</sup> (his guide to

date summary of our present knowledge regarding this figure is to be found in 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), 520–24. Other useful references are to be found in Blessich, *La geografia alla corte aragonese in Napoli*, 41–47; Giulia Guglielmi-Zazo, “Bernardo Silvano e la sua edizione della Geografia di Tolomeo,” *Rivista Geografica Italiana* 32 (1925): 37–56 and 207–16, and 33 (1926): 25–52; R. A. Skelton’s “Biographical Note” to the facsimile of Ptolemy, *Geographia: Venice, 1511* (Amsterdam: Theatrum Orbis Terrarum, 1969), V–XI; and Peter H. Meurer, *Fontes cartographici Orteliani: Das “Theatrum orbis terrarum” von Abraham Ortelius und seine Kartenquellen* (Weinheim: VCH, Acta Humaniora, 1991), 240–41.

69. Blessich, *La geografia alla corte aragonese in Napoli*, 43.

70. Silvano even dedicated a short chapter, “Adversus Marcum Beneventanum Monachum,” in his introduction to the *Geography* to his criticisms of some of Beneventano’s readings. See Ptolemy, *Geographia*, [cc. 2v].

71. The chart is now in the National Maritime Museum, London. On Domenech, a Majorcan cartographer active between 1446 and 1489

weights and measures dates from two years earlier and was produced in Siena).<sup>72</sup> However, we know nothing at all about Zuane di Napoli, who is mentioned in the Cornaro Atlas in the BL and seems to have spent his entire working life outside his homeland,<sup>73</sup> and only a little more about the Calabrian Cola di Briatico, author of one extant atlas.<sup>74</sup>

The basis of nautical cartography in Naples during the sixteenth century was laid during the period of Aragonese rule. Vesconte Maggiolo, one of the most extraordinary chartmakers of the Renaissance, was at work in Naples between 1511 and 1519, the period during which nautical cartography workshops were started in the other principal military or commercial centers of the kingdom, such as Messina and Palermo.<sup>75</sup>

### CITY PLANS OF NAPLES: PRODUCTION AND AIMS

If we exclude the chorographical maps of the kingdom (published in Rome and Venice) and the work of Nicola Antonio Stigliola and Mario Cartaro (restricted to the last quarter of the century and discussed later), the only significant works of nonnautical cartography dating from the sixteenth century and the early seventeenth are printed city plans. Produced by Carlo Theti (a military engineer), Etienne Du Pérac (an engraver and draftsman), and Alessandro Baratta (an engraver and surveyor), these are clear proof that the Naples of the day was not devoid of technical expertise in cartographic matters.

#### THE PLAN OF NAPLES BY CARLO THETI (1560)

Engraved in Rome by Sebastiano di Re in 1560, the plan drawn up by Carlo Theti is an important topographical representation of the entire city of Naples. Throughout the sixteenth century, Theti's work and that of Du Pérac would be the unchallenged cartographic renditions of the city (though the latter's map would enjoy greater success, and over a longer period of time).<sup>76</sup> Theti was born into a patrician family in Nola in 1529.<sup>77</sup> The first news we have of him as a grown man regards his part in the military operations against the bases of the Barbary pirates on the Tunisian coast (pirate raids on the Gulf of Naples and the islands of the kingdom had been a recurrent menace, especially during the year 1550). We know next to nothing of his life between 1551 and 1564, but it is highly probable that he stayed in Naples to complete his technical training at the service of the Spanish forces. Perhaps he took part in the siege of the Castle of Ostia by Fernando Alvarez de Toledo, duke of Alba, in 1556, which he described in great detail—and with great feeling—in his treatise on fortifications. In 1565, he made two acquaintances that would change the course of his life: Pros-

pero Colonna and Pompeo Colonna, duke of Zagarolo. With the latter, that same year he traveled to Vienna, where he was presented at the court of the emperor Maximilian II, to whom he would dedicate his first book on fortifications in 1569.<sup>78</sup> During his stay in the city, his services as a military engineer were called upon by the elector of Bavaria, Wilhelm II. Around 1577, he returned to Italy, succeeding to the Venetian post that had been held by Michele Sammicheli and working on the fortification of the Venetian cities of Bergamo and Verona. Subsequently he would work at the courts of the Savoia, Este,

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and a pupil of Petrus Roselli, see Julio Rey Pastor and Ernesto García Camarero, *La cartografía mallorquina* (Madrid: Departamento de Historia y Filosofía de la Ciencia, "Instituto Luis Vives," Consejo Superior de Investigaciones Científicas, 1960), 84, and Tony Campbell, "Portolan Charts from the Late Thirteenth Century to 1500," in *HC 1*: 371–463, esp. 429, 431, and 432 n. 421 (Campbell dates the chart 148–, considering the last digit illegible). The nautical chart of 1486 was produced "jn civitate Neapoli."

72. See Gustavo Uzielli and Pietro Amat di S. Filippo, *Mappamondi, carte nautiche, portolani ed altri monumenti cartografici specialmente italiani dei secoli XIII–XVII* (Rome: Società Geografica Italiana, 1882), 232.

73. See Cortesão, *Portuguese Cartography*, 2:195–200, esp. 197 and 200 n. 255, and Campbell, "Portolan Charts," 432 and 437 n. 474.

74. See Roberto Almagià, "Notizie su due cartografi calabresi," *Archivio Storico per la Calabria e la Lucania* 19 (1950): 27–34, esp. 32–34.

75. On nautical cartography in southern Italy, see chapter 7 in this volume and Valerio, *Società uomini*, 44–48.

76. Theti's map was mentioned in bibliographies from 1904 onward. The map was not reproduced and accurately described until the 1990s; see Brigitte Marin, "Le plan de Naples de Carlo Theti gravé par Sebastiano di Re en 1560: Un nouveau document pour l'étude de la cartographie et de la topographie napolitaines," *Mélanges de l'École Française de Rome: Italie et Méditerranée* 102 (1990): 163–89, and Valerio, *Piante e vedute di Napoli*, 30–32. Even the varied biographical information we have on the military architect Carlo Theti makes no mention of this interesting work of surveying and draftsmanship. The most reliable studies on Theti are in Pietro Manzi, *Carlo Theti, da Nola, ingegnere militare del sec. XVI* (Roma: Istituto Storico e di Cultura dell'Arma del Genio, 1960), and idem, *Architetti e ingegneri militari italiani dal secolo XVI al secolo XVIII: Saggio bio-bibliografico* (Rome: Istituto Storico e di Cultura dell'Arma del Genio, 1976), index.

77. The Theti family is also mentioned by Ambrogio Leone in *Nola (la terra natia): Opera piccola, precisa, completa, chiara, dotta . . .*, trans. Paolino Barbati (Naples, 1934), 183.

78. [Carlo Theti], *Discorsi di fortificationi del Sig. Carlo Theti Napolitano* (Rome: Giulio Accolto, 1569). The first edition, with only thirty maps, was not recognized by the author as his work. In subsequent editions, much extended and supplemented with numerous woodcuts, the author comments on how a number of his observations on the science of military engineering, the fruit of his discussions with the Colonna brothers, "were several years ago, when I was at the court of the king—where I am still—printed under [my] name in Rome, by people who perhaps thought in that way to please me"; see *Discorsi delle fortificationi, espugnationi, & difese delle città, & d'altri luoghi* (Venice: Francesco de Franceschi Senese, 1589), "A' Lettori Benigni." A later edition was printed in Venice in 1617 by Giacomo de Franceschi. For a list of editions of the *Discorsi*, see Manzi, *Architetti e ingegneri militari italiani*.

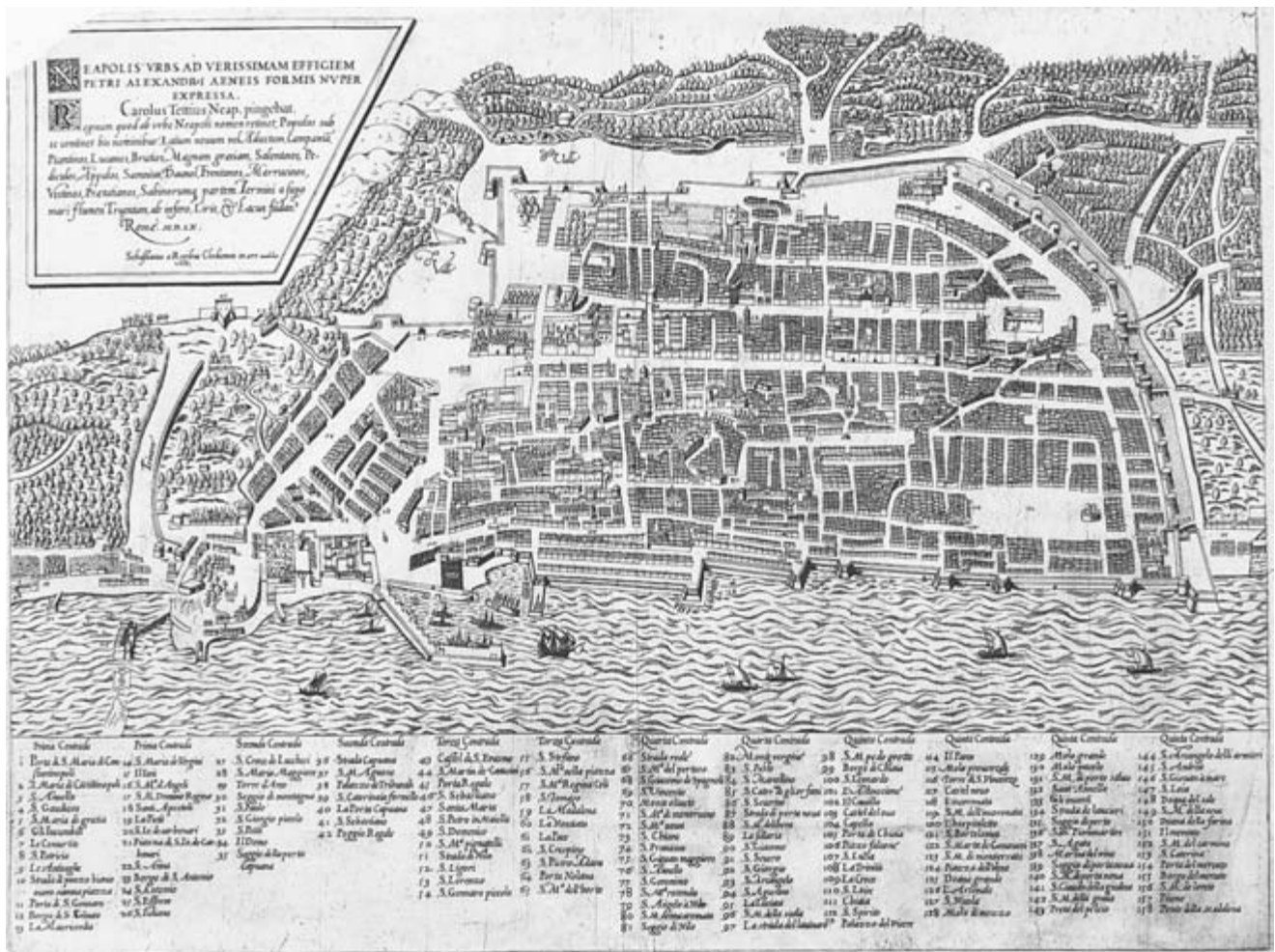


FIG. 37.9. PLAN OF NAPLES BY CARLO THETI, 1560. Though it was produced in Naples by Theti, it entered the market via Rome—one of the most active and dynamic centers of printing in Italy—where it was engraved. The map was a thematic work, intended to give a military reading of the ur-

ban fabric, rather than a fully fledged land survey (it does not contain any reference to scale, for example). Size of the original: 41.0 × 54.5 cm. Photograph courtesy of the BNF (Estampes Vb 116).

and Medici families<sup>79</sup> before dying in Padua on 10 October 1589.

Theti's plan of Naples depicts the city as it was in the period from 1550—the year in which he returned from the military mission in the Tunisian coastal region—to 1560, the year in which the map was published (fig. 37.9). It shows, for example, that work was already underway, and partially completed, on the main projects commissioned by the viceroy Don Pedro de Toledo that had started as early as 1537 to complete and repair the city walls (part of which had suffered damage during the past attacks of French troops).

At first glance, it is clear that the map was created as a special-purpose rather than a general map. Theti's map aims to offer a reading of the urban layout and city walls from a strictly military point of view. Questions of metrics and topography are deliberately ignored: for ex-

ample, there is no reference to any kind of scale, even though this was generally indicated in contemporary maps (whether they kept to a fixed scale or not). This fact is particularly significant and should not be ignored if we want to interpret the map correctly in its historical context.<sup>80</sup> This does not mean, however, that the urban layout was depicted vaguely or in little detail—far from it.

79. The 1588 edition was dedicated to Ferdinand I de' Medici, grand duke of Tuscany. On Theti's peregrinations, see Manzi, *Carlo Theti da Nola*, and the bibliography therein.

80. The absence of such methodological considerations has led some scholars to compare the two plans in terms of ground area and then make precise deductions with regard to the extent of building work in the city in the period between the two works. For example, on the basis of the number of roads shown running through the Spanish Quarter and parallel to the Via Toledo (one in the Theti map and six in that by Du Pérac), Marin deduces that there had been expansion in the area



The map was clearly drawn by someone who had long been familiar with the city; the masterly synthesis of information it contains could have been achieved only by someone who knew Naples very well indeed.

Carlo Theti may have perfected his own expertise in the techniques of military engineering during the period of urban renewal in Naples under Don Pedro, and may even have played a part in the construction of some of the fortifications. Techniques of land surveying were one of the things that any military engineer would have to learn as part of his apprenticeship, and this map of Naples might well have figured in such training. In Theti's case, specific knowledge of surveying techniques is documented in some of the chapters of his most important printed work, which also contains a description of the surveying instruments he invented for himself.<sup>81</sup>

Of particular interest, because they are otherwise known to us only from literary descriptions, are the arches and arcades shown at the main road junctions. These are described by Carlo Celano, for example, who interprets them as "serving to make the city stronger by offering a means of defending the entrance to the street from the house above."<sup>82</sup> The Anticaglie and the Torre dell'Arco are identified in the legend (the former as no. 9, the latter as no. 29; demolished in 1564, the Torre dell'Arco does not appear on Du Pérac's map). The presence of these features is also dictated by the military nature of this description of the city; as further proof of that military nature, one might cite the inclusion of the San Severino ramps, which again do not feature in Du Pérac's map. Given their strategic importance for the movement of men and matériel, Theti's plan depicts them in great detail, even if out of scale. The riots of 1547, which had involved violent clashes between citizens and Spanish soldiers, were still a vivid memory for all Neapolitans, and the surveyor's eye was far from neutral: he paid almost obsessive attention to the description of thoroughways and connecting roads, thus offering a reading of the city as a structured whole of interrelated spaces. Given its very specific nature, the map had a restricted market and so was no great publishing success. It was reprinted, however, some thirty years later by the publisher Nicolas van Aelst, in a version that included some small but significant updates.<sup>83</sup>

#### THE MAP OF NAPLES BY ETIENNE DU PÉRAC (1566)

The map of Naples engraved by Etienne Du Pérac in Rome was the first real topographical account of the city, and, from both a technical and an artistic point of view, it fully merits a place among the other major works of urban iconography that were being produced throughout sixteenth-century Europe (fig. 37.10). Interest in this plan of Naples, which was first printed in Rome, goes back more than a century. Du Pérac signed it with the Italian

form of his initials, S P (Stefano du Perac), and his emblem, a caduceus (the wand carried by Mercury). He is now argued to have been at work in Rome from 1554 onward, collaborating extensively with Antonio Lafreri (but also with other printers in the city). In the final decade of the century, he moved to Fontainebleau, where he worked for Henri IV as an architect and fresco artist.<sup>84</sup>

Du Pérac was also a keen-eyed draftsman of classical antiquities and the actual author of a number of the drawings that were the basis for his engravings, among which one should undoubtedly mention the large plan of Rome printed by Lafreri and dated 1577. Therefore, it is possible that Du Pérac actually drew the plan of Naples, though it is unlikely—and I would exclude the probability—that he actually did the surveying work himself. The most probable scenario is that he copied from an original work that is now lost. With regard to the city plan of Rome, one can accept Frutaz's claim that it shows that Du Pérac was "a real artist and experienced cartographer."<sup>85</sup> We know that he had carefully studied both ancient and modern Rome (we also know that in drawing up the topography of the city he was one of the first to use the recently discovered marble city plan dating from the reign of Severus). Nevertheless, it is hard to accept that he did the on-site surveying necessary for the Naples plan, given that (as far as we know) both the history and the territory of the city lay totally outside his areas of study.

Due to the difficulty of working with a single large plate, the city plan was engraved on two copperplates. The feature that makes this Du Pérac map interesting from both a historic and a cartographic point of view is that it was drawn on a large scale and seems to respect that scale almost throughout. A calculation based on the indicated scale bar of one hundred *canne* to approxi-

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between the two surveys "unless," she adds soon afterward, "it hadn't represented the zone as a compact block"; see Marin, "Le plan de Naples," 184. It is probable that there was urban expansion in Naples over this period, but a comparison of these two maps certainly does not provide convincing proof of it. If one applied such a comparison consistently, one would have to draw absurd conclusions, for example, that in the period between the two works whole new city blocks appeared to the north of the Piazza del Mercato (nine streets are shown in Theti, while Du Pérac's map shows the correct number, eleven).

81. See *Discorsi delle fortificationi*, bk. 2, chap. 3 (on the compass), chap. 4 (on measuring distances, heights, and depths), and chap. 5 (on new instruments for measuring distances, heights, and depths).

82. Passage quoted in Marin, "Le plan de Naples," 185–86.

83. See Valerio, *Piante e vedute di Napoli*, 73–74.

84. On Du Pérac, see Fabia Borroni Salvadori, *Carte, piante e stampe storiche delle raccolte lafreriane della Biblioteca Nazionale di Firenze* (Rome: Istituto Poligrafico e Zecca dello Stato, 1980), xx–xxii, with bibliography, and Etienne Du Pérac, *Roma prima di Sisto V: La pianta di Roma Du Pérac-Lafréry del 1577*, ed. Franz Ehrle (Rome: Danesi, 1908), 8–11.

85. Amato Pietro Frutaz, *Le piante di Roma*, 3 vols. (Rome: Istituto di Studi Romani, 1962), 1:23.

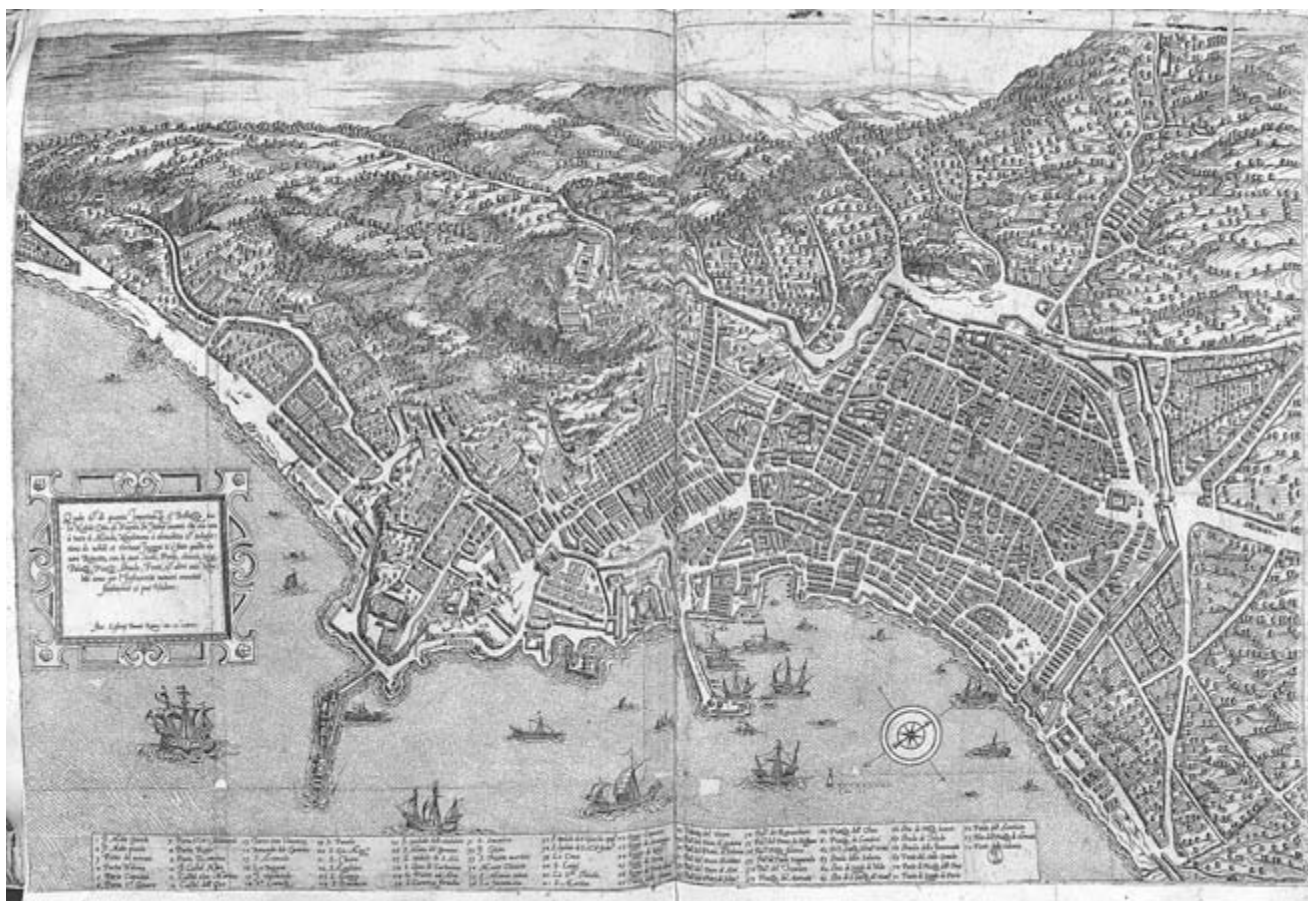


FIG. 37.10. PLAN OF NAPLES BY ETIENNE DU PÉRAC, 1566. Engraved by Du Pérac in 1566, this plan of Naples marks a milestone in the history of topographic renditions of the city. Its accuracy and consistent scale make it one of the most interesting urban surveys of mid-sixteenth-century Europe. Although we do not know the identity of the actual surveyors—at most, Du Pérac could have been the draftsman as well as the

engraver—the map reveals that a number of highly specialized topographers and surveyors were at work in the city at a time when Naples was undergoing important urban growth and southern Italy as a whole was taking on an important strategic role among the various Spanish dominions in Europe. Size of the original: 51.8 × 83.2 cm. Photograph courtesy of the Biblioteca Nazionale Centrale, Rome (71.6.G.2, c. 102).

mately forty millimeters gives a ratio of about 1:5300, which becomes 1:5600 if one takes the *canna* used to be not the *canna napoletana* but the *canna architetonica* that was in use in Rome. Indeed, given Du Pérac's familiarity with architectural measurements, it is highly likely that he did use the latter unit of measurement.<sup>86</sup>

Given the general unreliability of the scale as indicated on maps, I have calculated the true scale by measuring certain stretches from different parts of the map along alignments in different directions.<sup>87</sup> In effect, as an overall scale one might take about 1:6000. But what is truly surprising is that some features that are apparently rendered in perspective drawings, such as San Leonardo on the coast of Chiaia or the Charterhouse Monastery on the hill of San Martino, are planimetrically exact in their alignment. Hence, the Du Pérac map must have been the fruit of an on-site topographical survey carried out with

86. The *canna napoletana* measured about 2.11 meters; see Antonio Pasquale Favaro, *Metrologia, o sia, Trattato generale della misure, de' pesi, e delle monete* (Naples: Nel Gabinetto Bibliografico e Tipografico, 1826), pt. 2, p. 104. The Roman *canna architetonica* measured 2.23 meters; see Martini, *Manuale di metrologia*, 596.

87. The end points were chosen from among the more easily recognizable features that have not been subject to alterations that might have changed their planimetric position. The comparison of measurements was made with those in the 1828 map drawn up by the Ufficio Topografico, in which these points are clearly identifiable. The following is a list of the resulting scales:

Harbor lighthouse—sea bastion at S. Lucia	1:5500
Western tower C. Nuovo—apse of S. Chiara	1:6300
Harbor lighthouse—facade of the cloister of S. Martin	1:5900
Harbor lighthouse—Carmine bastion	1:6000
Sea bastion at S. Lucia—S. Leonardo	1:6400
Royal port—porta Capuana	1:5900
Sea bastion at S. Lucia—apse of S. Chiara	1:6300
S. Leonardo—royal port	1:5900

technically adequate instruments (such as a graphometer, compass, etc.), perhaps accompanied by triangulation readings (geometrical triangulation certainly was known at the time and sometimes was applied in the survey of small sites).<sup>88</sup> The landscape and hills given at the top of the map are purely figurative, designed to meet the contemporary taste for *vedutismo*. At a later stage, the artist added the elevations of a number of important buildings and other architectural features within the city.<sup>89</sup>

The measurements I have made confirm the geometrical rigor with which the entire map was constructed—a rigor that marks a veritable revolution in Neapolitan cartography. In effect, Naples arrived late on the scene, and yet made its appearance with a staggering work that would remain unsurpassed for more than two centuries. It is truly a shame that in the city's archives there is no trace of the original survey, which—given the technology applied—must have been a long-term project involving expert surveyors and topographers and carried out under the aegis of (or, at least, with the approval of) the viceregal government, if not of the Spanish crown directly. The map is also strikingly up to date; even if more extensive evaluation of examples is necessary before offering a final judgment, one might cite here the fortified guard post near Mergellina, which we know was constructed after 1563.

The year 1566 was an important one in the development of the city's urban fabric. On 31 July of that year, the viceroy issued the first of the decrees intended to limit building within the city walls—a ruling that marked the end of a long-running dispute “over planning the growth” of the city of Naples, which had eventually required the direct intervention of Philip II himself.<sup>90</sup> Also, 1566 was the year in which the publisher Scotto issued Giovanni Tarcagnola's *Del sito, et lodi della città di Napoli*<sup>91</sup>—a sort of literary counterpart to Du Pérac's map.

The building work and defense consolidation initiated by the viceroy Don Pedro de Toledo (present in Naples from 1532 to the year of his death, 1553) is faithfully recorded in Du Pérac's map, which may therefore have been intended as an instrument of city planning. One can certainly rule out that Du Pérac's work was drawn up for some military purpose, even though there was no lack of military justification for a new, fuller map of the city—for example, the 1547 riots in Naples that followed the Spanish attempts to introduce the systems of the Spanish Inquisition into the kingdom, or the defense problems arising from the western gap in the city walls (that continued to exist in spite of the fact that a 1505 dispatch from Ferdinand II [the Catholic] had ordered the completion of the Aragonese city defenses after the signing of the Treaty of Blois [1504] had effectively marked the beginning of Spanish dominion in Italy). However, the fact that rules out any kind of military purpose behind the map is that the work was not kept as a secret instrument of Spanish power (as

other maps would be later). With the abdication of Charles V in 1556, when his son Philip II became ruler of all his Mediterranean dominions, and the subsequent Treaty of Cateau-Cambrésis (1559), Spanish power in southern Italy became a consolidated reality, and attention was once more focused on Naples as a city.

#### THE VIEW OF NAPLES BY ALESSANDRO BARATTA (1627)

The focus on the city of Naples acted as a catalyst and later resulted in the production of a very refined work of cartography: the large perspective view of Naples by Giovanni Orlandi (a publisher and engraver), Nicolas Perrey (an engraver of French origin), and Alessandro Baratta (a more complex figure, an engraver and draftsman).<sup>92</sup> Comprising a total of ten sheets, the view was first published in 1627<sup>93</sup> and then reprinted just two years later with sub-

88. On instruments of measurement, see “Kompaß” and “Winkelmeßgerät” in *Lexikon*, 1:417–18 and 2:892–93. On the actual knowledge of triangulation in the first half of the sixteenth century, see N. D. Haasbroek, *Gemma Frisius, Tycho Brahe and Snellius and Their Triangulations* (Delft: Rijkscommissie voor Geodesie, 1968), 11–14, and on the instruments, see Maccagni, “Evoluzione delle procedure di rilevamento,” and Piero Falchetta, “La misura dipinta: Rilettura tecnica e semantica della veduta di Venezia di Jacopo de' Barbari,” *Ateneo Veneto* 178 (1991): 273–305. The latter contains some interesting points on the topographical and perspective instruments that might have been used in urban surveying. It should be pointed out that, contrary to what is usually claimed, the first urban images of Naples (those of Theti and Du Pérac) are not cityscapes but town plans, which disproves any simplistic evolutionary reading that argues that topography was a development of a more pictorial type of urban view.

89. See Valerio, *Piante e vedute di Napoli*, 35–38, esp. 36.

90. See Franco Strazzullo, *Edilizia e urbanistica a Napoli dal '500 al '700*, 2d ed. (Naples: Arte Tipografia, 1995), 3–15 and 127–30, quotation on 127, which was originally published in 1968 and was among the first works to look at the institutional and urban planning complexities of Naples. See also Giulio Pane and Vladimiro Valerio, eds., *La città di Napoli tra vedutismo e cartografia: Piante e vedute dal XV al XIX secolo* (Naples: Grimaldi, 1987), 42–45 (by Giulio Pane), which highlights how the map of Naples echoes precise features of the urban fabric and gives a stimulating reading of it as an architectural document.

91. See Giovanni Tarcagnola, *Del sito, et lodi della città di Napoli con una breve historia de gli re suoi, & delle cose piu degne altroue ne' medesimi tempi auenute* (Naples: Scotto, 1566). On this figure, see Francesca Amirante et al., eds., *Libri per vedere: Le guide storico-artistiche della città di Napoli, fonti testimonianze del gusto immagini di una città* (Naples: Edizioni Scientifiche Italiane, 1995), 24–26.

92. On Baratta there is fairly extensive literature. See Giulio Pane, “Napoli seicentesca nella veduta di A. Baratta,” *Napoli nobilissima* 9 (1970): 118–59 and 12 (1973): 45–70; Anna Omodeo, *Grafica napoletana del '600: Fabbricatori di immagini* (Naples: Regina, 1981), 15–16 and 52; Alessandro Baratta, *Fidelissimae urbis Neapolitanae cum omnibus viis accurata et nova delineatio*, ed. Cesare De Seta (Naples: Electa Napoli, 1986); Pane and Valerio, *La città di Napoli*, 109–14 (by Giulio Pane); *All'ombra del Vesuvio: Napoli nella veduta europea dal Quattrocento all'Ottocento*, exhibition catalog (Naples: Electa Napoli, 1990), 364; and Valerio, *Società uomini*, 61–63.

93. A copy of the first edition, reassembled on linen and minus sheets 2 and 4, is in the BL.

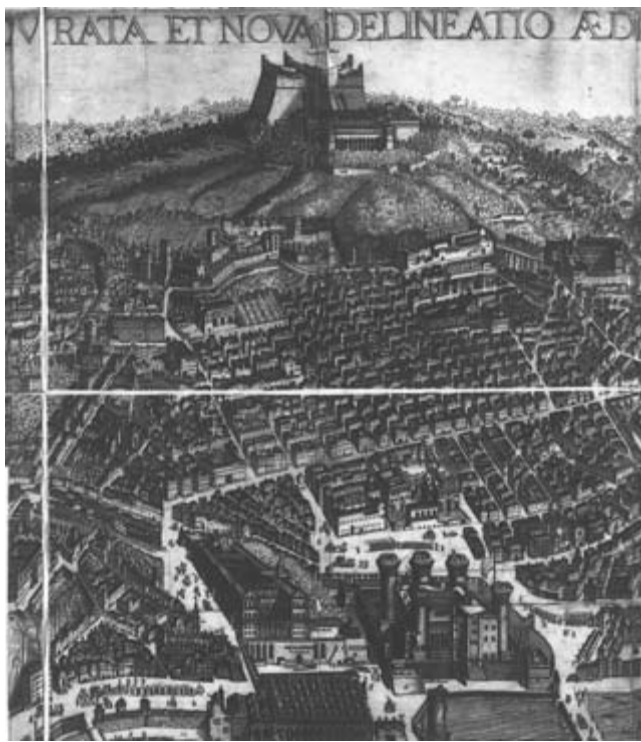


FIG. 37.11. DETAIL FROM THE PLAN OF NAPLES BY ALESSANDRO BARATTA, 1627. This detail from *Fidelissimae urbis Neapolitanae . . .* shows a foreshortening of the royal palace according to an unrealized project of the architect Domenico Fontana. The detail was subsequently changed in the 1629 edition. Size of the entire original: 93.6 × 247.5 cm. Photograph courtesy of the BL (Map Library, 24045.[2]).

stantial modifications in the banderols and in some of the copperplates (fig. 37.11). An interesting precedent for this depiction of Naples from the sea is to be found in a work by the Dutch landscape artist Jan van de Velde, which was issued as a four-sheet engraving around 1616.<sup>94</sup> However, although Baratta borrowed from Van de Velde even the location of his signature (a sailboat set in the foreground), the complexity of his own survey of the urban area, complete with a view of the Flegrei area in the background, is without precedent in figurative representations of Naples.

A complex descriptive work, Baratta's view of Naples also reveals the draftsman's command of the principles of perspective (fig. 37.12). The image of the city was produced using multiple systems of representation. Although the buildings and the urban blocks were drawn in rough axonometric perspective, according to the use of contemporary urban iconography, the general topographic plan, which suggests a kind of theatrical scene, was represented in curvilinear perspective. We know very few examples of this latter form, which had its historical roots in Leonardo da Vinci's treatise on painting and in the pictorial experience of the French miniaturist Jean Fouquet,

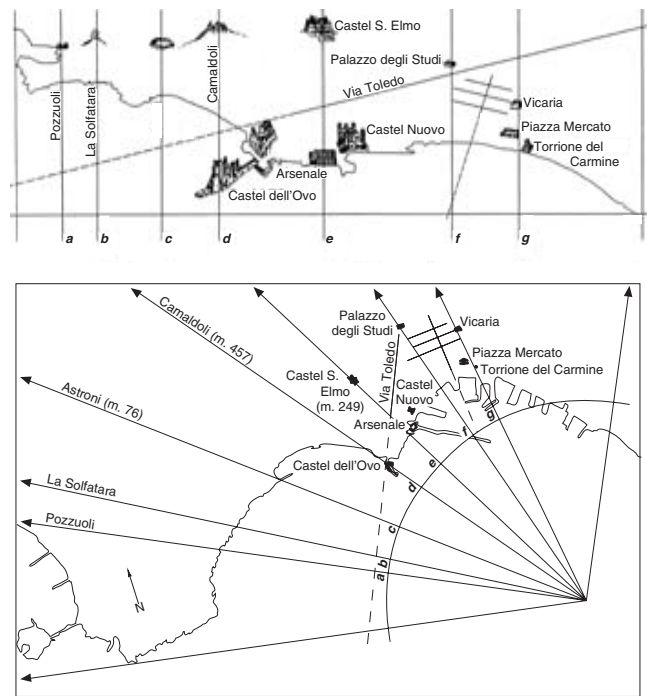


FIG. 37.12. PERSPECTIVE IN BARATTA'S VIEW OF NAPLES. This diagram indicates certain geographical and architectural features (top) and a reconstruction on the basis of a modern map (bottom) of the perspective used by Alessandro Baratta in his view and city plan of Naples (1627). The identification of a number of lines of vision (top, a–g) has made it possible to identify the “theoretical” point from which the view of the city is taken (bottom). The correct alignment of these various sightlines suggests that the general layout of the view was constructed as a veritable perspective drawing, and probably created at the drawing board using existing cartographic material. For obvious reasons of efficacy, the sectors d–e and e–f are not in proportion but magnified. The line of the coast from Torrione del Carmine to Pozzuoli and the orientation of the Via Toledo are coherent only with the use of a curvilinear perspective. Based on Vladimiro Valerio, *Società uomini e istituzioni cartografiche nel Mezzogiorno d'Italia* (Florence: Istituto Geografico Militare, 1993), 62.

both from the last quarter of the fifteenth century. The technique was very little developed in successive centuries except for the few but important hints in Guidobaldo del Monte's Renaissance treatise on perspective.<sup>95</sup>

94. On the view produced by Van de Velde, see Pane and Valerio, *La città di Napoli*, 94–97 (by Vladimiro Valerio).

95. Guidobaldo del Monte (Guido Ubaldo Monte) was an important innovator in and reformer of the Renaissance rules of perspective. Among his works on this and the other themes that occur in his writings, one might mention *Planisphaerium Universalium Theorica* (Pesaro: Geronimo Concordia, 1579) (see Rocco Sinisgalli and Salvatore Vastola, *La teoria sui planisferi universali di Guidobaldo del Monte* [Florence: Cadmo, 1994], with translation and commentary), and *Guido Ubaldo Monte (Guidobaldo del Monte), Gvidi Vbaldi e Marchionibus Perspectivae libri sex* (Pesaro: Geronimo Concordia, 1600)

### THE PRINTED MAPS DATING FROM BEFORE THE NEW SURVEY OF STIGLIOLA

Spain aimed to achieve total ideological control over the city of Naples—above all, in the early years of its rule by viceroy. This meant cutting the links that existed between the various aristocratic intellectual circles and undermining the cultural traditions of the Aragonese period (symbolized by such figures as Pontano). The result was a long period of isolation in which Neapolitan society was cut off from the rest of Italy and Europe. With the exception of maps of the capital, this state of affairs is also reflected in Neapolitan cartography, the contents and techniques of which lagged behind those of other European states.

Two printed maps of the kingdom of Naples were published in 1557, one in Rome and the other in Venice, and thus date from more than fifty years after the Spanish crown began its dominion over Naples. The Rome map was printed by Michele Tramezzino and engraved by Sebastiano di Re after a work by Pirro Ligorio, a Neapolitan architect and scholar of classical antiquity.<sup>96</sup> Undoubtedly original, the map is totally different from the image given in Ptolemy's *Geography* and even from that contained in the "Tabula nova" of Italy that was included in the fifteenth-century revision of that work. However, apart from the general outline of the kingdom, for which we cannot identify a source, it is clear that the cartographer drew extensively on what we might today describe as archaeological information. As Almagià observed, the map "is full of historical-archaeological names and information, relating to ancient tribes and peoples, roads, cities that have since disappeared, and other famous sites of classical antiquity."<sup>97</sup>

The anonymous map printed in Venice bears only an indication of the printer who produced and sold it: "Alla libreria della Stella," which we know refers to the premises of the printer and bookseller Giordano Ziletti. Like the map printed in Rome, this is aligned with north-east at the top. There are no degrees of latitude or longitude. The influence of contemporary written accounts is clear; archeology and history are decisive features. The map is rich in place-names, while each of the rivers is indicated simply by two parallel lines, with the name given at the mouth, an account that Almagià described as "most infelicitous, and often almost totally made-up or full of serious mistakes."<sup>98</sup> Overall, however, this seems a more careful work than Ligorio's, perhaps because one can feel the presence of contemporary geography, which might be due to the fact that Venice had solid military and commercial links with Puglia and the eastern areas of southern Italy.

The two maps were undoubtedly heavily copied and imitated over the course of the coming century. In part due to the authority enjoyed by its creator, Ligorio's map

would be included in Abraham Ortelius's *Theatrum orbis terrarum* (1570) and again in Gerard de Jode's *Speculum orbis terrarum* (1578). The Venice map appears in numerous "Lafreri collections"; with some small alterations, it was reprinted in Venice in 1562, and then again in the same city, by Giovanni Francesco Camocio, in 1566.

From Almagià onward, scholars have discussed how reliable these maps are, searching out where they are geographically mistaken and where they are correct. However, the historiography has overvalued the maps by failing to take into account a very basic fact: the two works are totally unreliable from a topographic point of view. It is clear that a geographical map that is based solely on written accounts, often not firsthand ones, and on other purely descriptive documents cannot meet any of the requirements of a geometrical representation of territory. After the theft of the Aragonese maps and the discontinuance of all direct topographical or astronomical surveys, firsthand geographical knowledge of the kingdom of Naples was obviously in a poor state. These two maps, published in Europe's most active and up-to-date book and print markets, clearly confirm this.

From the period before the new survey of Stigliola was commissioned by the viceroy in the 1580s, there is only one map that leads us to suspect that there may have been manuscript cartographic works that revealed more painstaking geographical study of southern Italy. This is Paolo Cagno's large map of the kingdom of Naples of 1582, which was republished in 1615 (fig. 37.13).<sup>99</sup> Although Cagno remains a mysterious figure, we know that he was a person of some importance whom Ortelius included in the "Catalogus auctorum" of the *Theatrum* beginning in the 1595 edition.<sup>100</sup> The original map, now lost, was striking both for its extraordinary size (the four sheets made up a map that measured 80 × 78 cm) and for the

(see Rocco Sinisgalli, *I sei libri della prospettiva di Guidobaldo dei marchese del Monte*, with translation and commentary [Rome: Bretschneider, 1984]).

96. On Pirro Ligorio, see Giovanni Bonacci, "Note intorno a Pirro Ligorio e alla cartografia napoletana della seconda metà del secolo XVI," in *Atti del V. Congresso Geografico Italiano, tenuto in Napoli dal 6 a 11 aprile 1904*, 2 vols. (Naples, 1905), 2:812–27; Roberto Almagià, "Pirro Ligorio cartografo," *Atti della Accademia Nazionale dei Lincei, Rendiconti, Classe di Scienze Morale, Storiche e Filologiche*, 8th ser., 11 (1956): 49–61; and the more recent Karrow, *Mapmakers of the Sixteenth Century*, 349–58.

97. Almagià, "Pirro Ligorio," 53.

98. Almagià, "Cartografia napoletana," 260.

99. Almagià, "Cartografia napoletana," 283–86.

100. See Peter H. Meurer, "The *Catalogus Auctorum Tabularum Geographiarum*," in *Abraham Ortelius and the First Atlas: Essays Commemorating the Quadricentennial of His Death*, ed. M. P. R. van den Broecke, Peter van der Krogt, and Peter H. Meurer ('t Goy-Houten: HES, 1998), 391–408, esp. 400 and 407, and Meurer, *Fontes cartographici Orteliani*, 123–24.

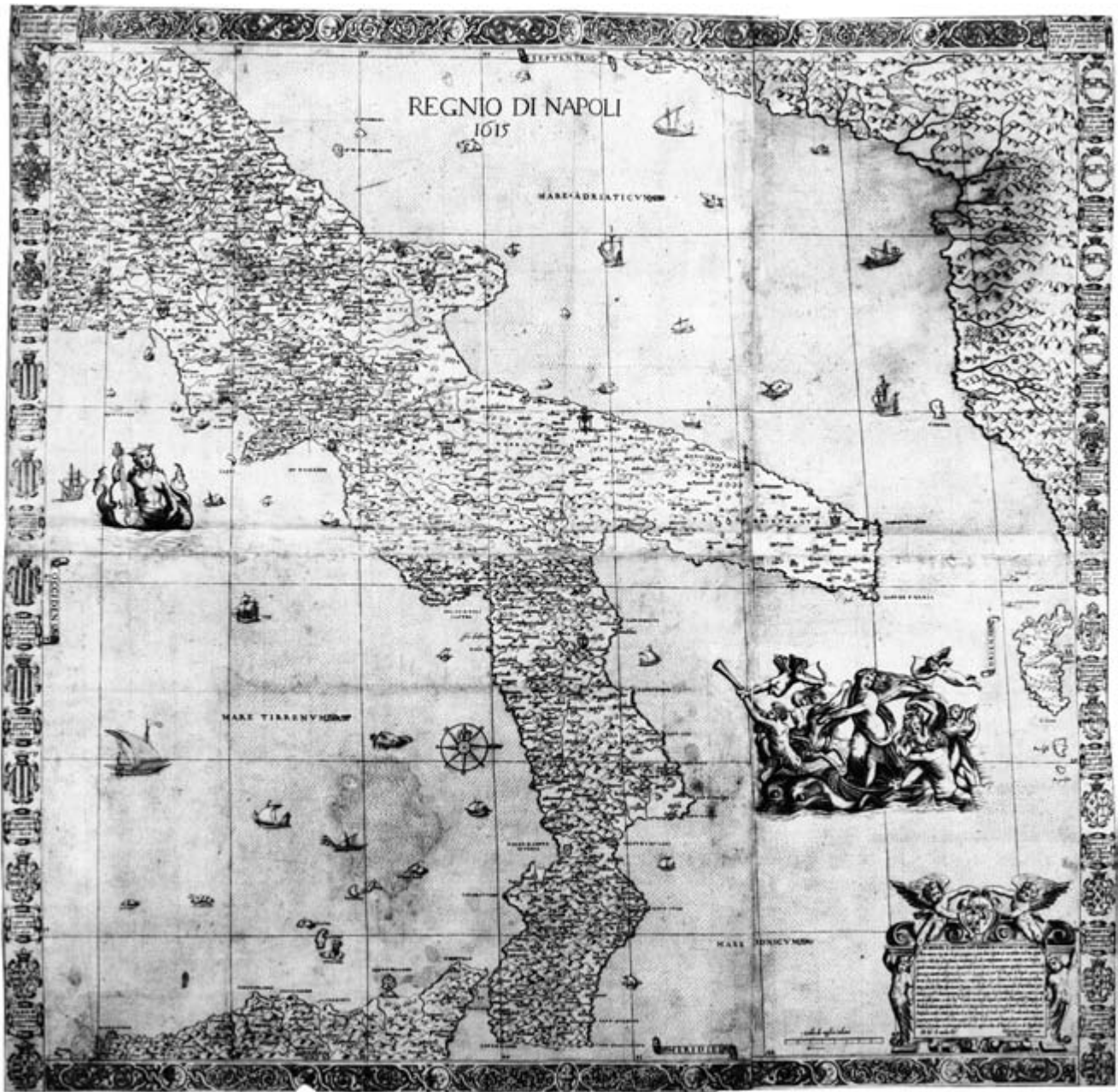


FIG. 37.13. MAP OF THE KINGDOM OF NAPLES BY PAOLO CAGNO, 1615. This map was first published in Naples in 1582, then republished in 1615 under the title “Regnio di Napoli.” The only change was in the dedication, where the ruling monarch was indicated in the frame in the upper left corner. In spite of a rather elongated Calabria and some de-

fects in the outline of the Salentine Peninsula, this map was still one of the best representations of southern Italy available in the early seventeenth century.

Size of the original: 80.5 × 78.5 cm. Photograph courtesy of the Newberry Library, Chicago (Novacco 2F/172).

quality of the engraving.<sup>101</sup> Under the scale indicating forty Italian miles (equal to 72 mm), the work bears the name of the engraver Hieronimo Siciliano—as mysterious a figure as the cartographer himself, and clearly just as gifted. The printer and publisher was Giovanni Battista Cappello, who in this period was also working on the publication of Scipione Mazzella’s *Descrizione del Regno*

*di Napoli*.<sup>102</sup> Cappello’s dedication says he enhanced Cagno’s manuscript map, which was “left incomplete by his sudden death.” The map is the first to give a correct

101. Reproduced in Almagià, *Monumenta Italiae cartographica*, 46 and pl. LI.

102. On Mazzella, see Amirante et al., *Libri per vedere*, 38–41.

orientation to southern Italy and to show the boundaries between the various provinces. The Salento Peninsula seems a rather squat version of that given in Giacomo Gastaldi's 1567 *La descrizione della Puglia*, but there is no identifiable source for the depiction of the region of Calabria. The same striking originality can be seen in the description of the Tyrrhenian coast from Garigliano to the Gulf of Policastro, in the outline of the Gargano and the Gulf of Manfredonia, and in the plotting of the rivers. Almagià noted that "the complex of the Volturno Basin with its intricate network of affluents is very well depicted" and that the map "contains a general depiction of southern Italy that is much better than that to be found in any previous work."<sup>103</sup>

Paolo Cagno's map can be dated around the period in which the official program of the viceroy was getting underway (ca. 1580). Indeed, it could be taken as the premise for that program or even a partial summary of the results. All in all, Cagno's work offers a cartographic representation of southern Italy that met contemporary market expectations and contained a degree of detail and accuracy that was compatible with that in the maps of other regions in Italy.

#### OFFICIAL SURVEYS: MAPS OF THE KINGDOM COMPILED BY NICOLA ANTONIO STIGLIOLA AND MARIO CARTARO

Around 1580, the viceroy of Naples—probably upon request from the Spanish court—commissioned a chorographical survey of the entire kingdom. As we have seen, following the disappearance of the Aragonese parchments, the exact form, size, and geographical orientation of southern Italy were practically unknown, and under these conditions it was almost impossible to exercise full political, military, and administrative control.

Unfortunately, the existing archival material does not give us the exact date or the stated aims of the survey. We know that Nicola Antonio Stigliola had been occupied on this task from at least 1583.<sup>104</sup> Then, in 1591, he was joined in his work by Mario Cartaro, the *tabulario* (surveyor) to the royal chamber, and both of them received an advance on their monthly salary because "upon order of his Excellency they are going to draw up the description of the kingdom." Cartaro was to receive "sixty ducats at thirty ducats a month, plus the ten scudi he receives for drawing and charting in plans all sites and layouts within this Realm," while Stigliola was to receive 120 ducats "for his salary for the said time,"<sup>105</sup> a sure sign that, at least in this early period, Cartaro was working under Stigliola.

Cartaro had been engaged in similar work since at least 1590.<sup>106</sup> From 1593 onward, he figured as one of the engineers to the viceregal court, while Stigliola was one of the city engineers before his dismissal from official positions

by 1595 because of accusations of heresy.<sup>107</sup> We do not know the verdict of Stigliola's trial, but it is certain that he must have confessed and abjured his faults, because he returned a free man. However, he was forbidden to continue his profession as a cartographer, and all his work on the survey was confiscated, as we know from a letter Jacopo Colio wrote to Ortelius on 18 October 1597.<sup>108</sup>

From this moment on, Stigliola was excluded from all connection with the survey. However, in a biographical sketch of Stigliola posthumously published, the survey is mentioned; the sketch says that Stigliola was "appointed to draw up a geographical description of the Kingdom of Naples, to be funded by the Court, he went together with his brother Modestino, another famous scholar, journeying around the Realm and then completed that map that, engraved by Cartaro, still bears his name."<sup>109</sup> The reference is to an engraving of the map for which the royal chamber commissioned Cartaro in 1611, but which has not come down to us, in part because it was, by order of his Most Catholic Majesty, declared "a secret document, whose accuracy might stir up jealousy."<sup>110</sup> His Most

103. Almagià, "Cartografia napoletana," 284 and 285.

104. See his letter to Ortelius in Abraham Ortelius, *Abrahami Ortelii (geographi antverpiensis) et virorum eruditum ad eundem et ad Jacobum Colium Ortelianum . . . Epistolae . . . (1524–1628)*, ed. Jan Hendrik Hessels, *Ecclesiae Londino-Batavae Archivum*, vol. 1 (Cambridge, 1887; reprinted Osnabrück: Otto Zeller, 1969), 370–71.

105. Almagià, "Cartografia napoletana," 294 n. 5. Almagià was the only scholar who was able to consult the treasury payment slips in the ASN. All this material, which included the records and reasons for payments relating to work on the map of the kingdom of Naples, was destroyed during the Second World War.

106. Almagià, "Cartografia napoletana," 294 n. 3.

107. From Matteo di Capua, Prince of Conca, in Naples (Dec. 1595) and from Cesare Miroballo (March 1596) we learn of Stigliola's complaints about the royal ministers; see Luigi Amabile, *Il santo ufficio della inquisizione in Napoli, narrazione con molti documenti inediti*, 2 vols. (Città di Castello: S. Lapi, 1892), vol. 2, Documenti, pp. 59 and 60. See also Saverio Ricci, *Nicola Antonio Stigliola, enciclopedista e linceo* (Rome: Accademia Nazionale dei Lincei, 1996).

108. Ortelius, *Epistolae*, 726–29, esp. 727, quoted in Almagià, "Cartografia napoletana," 295 n. 3.

109. The biography, by publisher Domenico Maccarano, accompanies the posthumous edition of Nicola [Niccolò] Antonio Stigliola, *Il telescopio over ispecillo celeste* (Naples: Domenico Maccarano, 1627).

110. Archives of the Accademia dei Lincei, MS. 13, fol. 111v, mentioned for the first time by Giuseppe Gabrieli in "Le prima Biblioteca Lincea o libreria di Federico Cesi," *Rendiconti della R. Accademia Nazionale dei Lincei, Classe di Scienze Morale, Storiche e Filologiche*, 6th ser., 14 (1939): 606–28, esp. 614, and then taken up in Roberto Almagià, "Alcune stampe geografiche italiane dei secoli XVI e XVII oggi perdute," *Maso Finiguerra* 5 (1940): 97–103, esp. 102–3. Almagià's transcription of these few passages is not correct (see Valerio, *Società uomini*, 50 n. 63). Given the interest of this document, I give it in its entirety: "Most illustrious Pietro Fernandez di Castro Conte di Lemos de Andrade e di Villana. . . . Having been ordered by the Count of Miranda, formerly viceroy of Naples to draw up a map of the whole kingdom and its boundaries, correcting the mistakes that the others contain, I went many times to different parts of the realm on this task, taking as

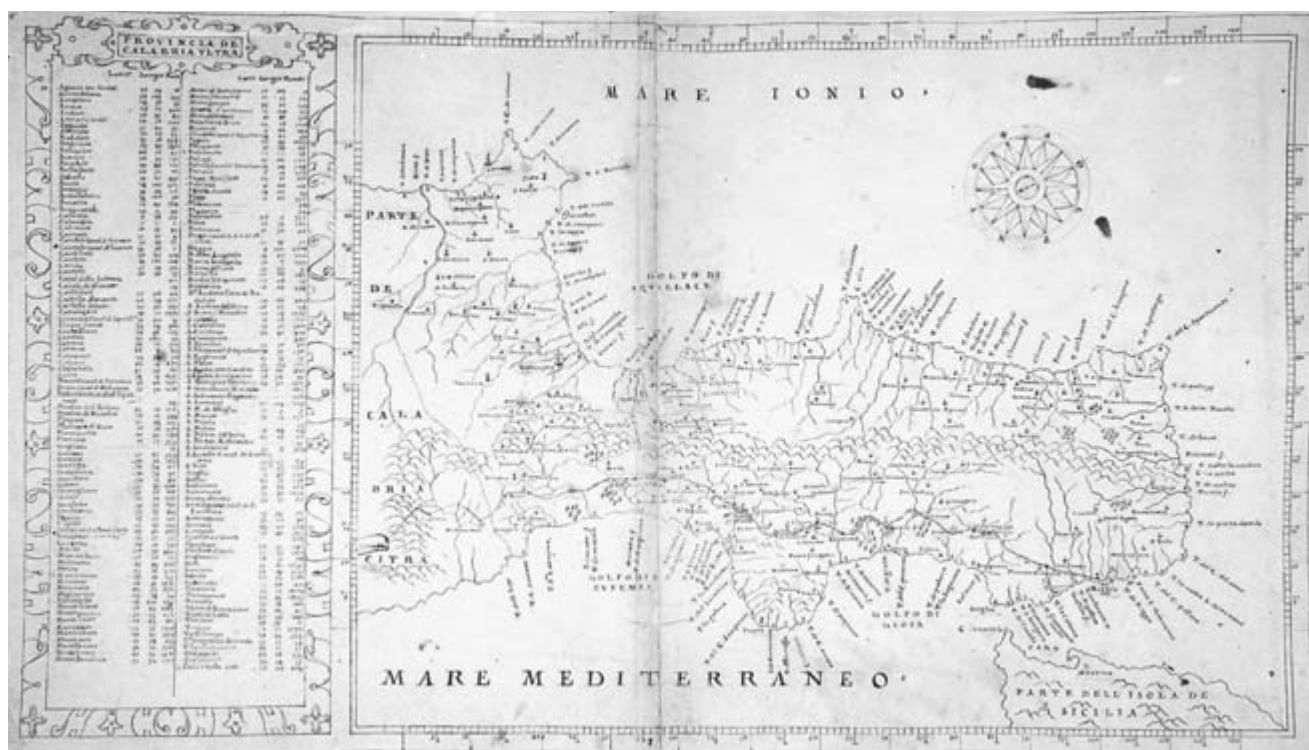


FIG. 37.14. "PROVINCIA DE CALABRIA VLTRA" (SIXTEENTH-CENTURY COPY). From a copy of the Stigliola-Cartaro atlas, which contains twelve province maps, though the overall map of the kingdom is missing. In this map, the southern limits of Calabria are correctly aligned south-southwest. The north of the wind rose does not coincide with the

edges of the sheet, and the subsequent "correction" of this caused the whole of Calabria to be given a false north-south alignment.

Size of the original: 39.0 × 68.5 cm. Naples, private collection. Photograph courtesy of Vladimiro Valerio.

Catholic Majesty was obviously still smarting from the destruction of the Armada in 1588 and could hardly forget that pirates continued to raid the coastal areas of the kingdom unhindered. In such a situation, it was clear that the wealth of detail and data in the map might create even more problems for the precarious defenses of southern Italy.

Therefore, a new and original atlas of the regions of the kingdom of Naples was drawn up between 1583 and 1595 under the direction of Stigliola and has survived in five different versions, the oldest dating from the end of the sixteenth century.<sup>111</sup> This atlas provides an extraordinary view of the entire kingdom, giving not only all the main towns and cities, province by province (fig. 37.14), but also all the coastal defense towers and the main rivers and lakes (fig. 37.15). Symbols, many of which are making their first appearance in a geographical map, are used to indicate not only natural features but also those relating to human activity: administrative buildings, military constructions, and infrastructures (fig. 37.16). The result offers a particularly coherent and manageable body of information from the point of view of both the cartographic and the statistical data given and that of the simple size of each individual sheet. The scale, which is the same in all

many pains over it as possible, especially in the happy year 1600, when Count of Lemos, father to Your Excellency and then viceroy, sent me in the company of D. Francesco Miondozza Serbellon to visit fortresses, castles, and towers, ordering me to make drawings and prepare reports on them, which I did. Now, having had that map engraved in copper by order of the royal chamber, I have published it. It seemed to me most just that it should be dedicated to Your Excellency, now viceroy of the same kingdom. May it please your benignity to look gracefully upon this, and upon me. And may God Our Saviour long save you. Naples, 25 January 1611. Mario Cartaro." There is also a postille. "The present map of the kingdom of Naples is only found very rarely, given that upon order of his Most Catholic Majesty it was prohibited as a secret document whose accuracy might stir up certain jealousies. It comprises twenty sheets of royal size paper." The viceroys referred to are Juan de Zunica, count of Miranda (viceroys from November 1586 to November 1595); Fernandez Ruiz de Castro, count of Lemos (viceroys from 1599 until his death on 16 October 1601); and Pedro Fernandez de Castro, count of Lemos, the former's son (viceroys from July 1610 to July 1616).

111. The manuscript copies so far discovered total six: Naples, Biblioteca Nazionale, MS. XII.D.100, signed "Mario Cartaro F.1613" (see the studies cited in the previous note and Don Fastidio [Benedetto Croce], "Mario Cartaro e l'atlante del Regno di Napoli," *Napoli nobilissima* 13 [1904]: 191; Biblioteca Apostolica Vaticana, Barb. Lat. 4415, signed "P.C. 1625" (see Almagià, "Cartografia napoletana"; idem, "Alcune stampe geografiche italiane"; and Roberto Almagià, *L'opera geografica di Luca Holstenio* [Vatican City: Biblioteca Apostolica Vaticana, 1942], 88, 107 n. 2, and 119); Bari, Biblioteca Nazionale, 16 T 17 (see Osvaldo Baldacci, "Notizia su un atlantino manoscritto del





FIG. 37.15. DETAIL FROM “PROVINCIA DI TERR[A] DI LAVORO” (SIXTEENTH-CENTURY COPY). Taken from a copy of the Stigliola-Cartaro atlas. One can see a number of the symbols and signs that are a distinctive feature of this copy. Size of the entire original: 39.0 × 68.5 cm. Naples, private collection. Photograph courtesy of Vladimiro Valerio.

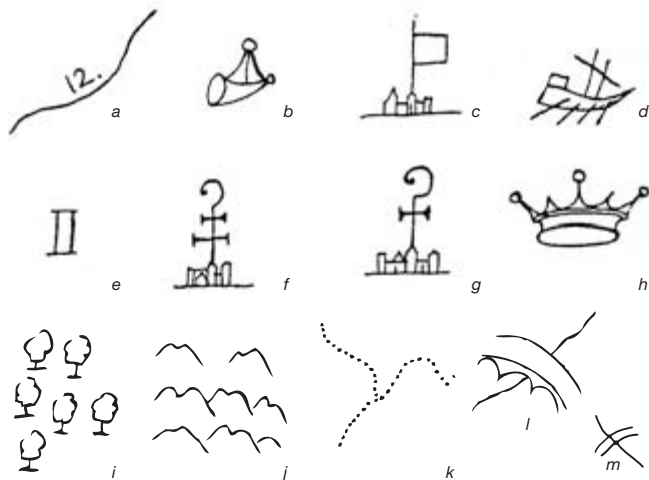


FIG. 37.16. CONVENTIONAL SIGNS AND SYMBOLS IN THE ATLAS OF THE KINGDOM OF NAPLES BY STIGLIOLA AND CARTARO, CA. 1595.

*a*—road, with the distance given in Neapolitan miles (1 mile = 1845 m); *b*—post station for the changing of horses; *c*—fortress or castle; *d*—port or sizeable harbor; *e*—coastal watchtower; *f*—archbishopric; *g*—bishopric; *h*—court of justice; *i*—wood or forest; *j*—mountain chain or individual mountains; *k*—border between provinces; *l*—stone-built bridge with more than one arch; *m*—single-arched bridge.

Based on Vladimiro Valerio, *Società uomini e istituzioni cartografiche nel Mezzogiorno d'Italia* (Florence: Istituto Geografico Militare, 1993), 53.

the known manuscripts, is around 1:500,000 (fig. 37.17). Another work on a comparable scale would not appear until 1769, when Ferdinando Galiani and Giovanni Antonio Rizzi Zannoni published, in Paris, their four-sheet map of the kingdom of Naples at a scale of 1:411,000.

Unlike the other chorographical maps of the day, this map of the kingdom of Naples included “many specific distances and measurements, so that one could see the miles from one district to another, useful for lodgings and for all the other necessities that have to be met daily in the service of His Majesty and the Viceregal Court.”<sup>112</sup> The sixteenth-century version thus gives roads with the distance in miles and the various post stations, and also accurately indicates the location of fortresses, coastal watchtowers, law courts, and harbors.

This survey of the kingdom also served the court as an instrument for demographic census and fiscal assessment. This is why each map has two distinct sections: on the right is the cartographic map, and on the left is the name of the administrative province, followed by an alphabetical list of the towns and other centers subject to the payment of hearth money (see fig. 37.14). Each name is accompanied by three numbers: the first two relate to coordinates (called latitude and longitude) necessary to locate the city, town, or village on the map, while the third indicates the number of hearths.

Stigliola’s survey of the kingdom provided a sort of national atlas, showing that Naples was abreast of what was happening in other nations. The similarity between the banderols and geometrical motifs he used reveals that Stigliola either had direct knowledge of such works as Christopher Saxton’s map of the English counties (1579) or was familiar with the Flemish printed collections of en-

Regno di Napoli conservato nella Biblioteca Nazionale di Bari,” *Annali della Facoltà di Magistero dell’Università di Bari* 1 [1960]: 111–22; BNF, Manuscrit Italien 52, signed “Paulus Krtarus Nap” followed by dates varying between 1634 and 1636 (see Cosimo Palagianò, *Gli atlantini manoscritti del Regno di Napoli di Mario e di Paolo Cartaro* [Rome: Istituto di Geografia dell’Università, 1974], which includes all four of the previously listed copies); private collection in Naples, map without year or signature but dating from the end of the sixteenth century (see Vladimiro Valerio, “Un’altra copia manoscritta dell’ ‘Atlantino’ del Regno di Napoli,” *Geografia* 1 [1981]: 39–46); and Valletta, *Biblioteka Nazzjonali ta’ Malta*, MS. DXXIX, composed of fourteen maps signed “Paolo Krtary 1642” (in the frontispiece, Krtary is described as “royal engineer and geographer”) (there is as yet no full account of this work, but it seems to be a copy of that in the BNF, which in turn seems to have been taken from that now in a private collection). The copies in the Vatican and in Bari seem to be of a different version. There are also two manuscript maps that are clearly linked to the Stigliola-Cartaro atlas: a map of Basilicata that was for sale in 1982 comes from a copy of that atlas and can be dated to the first half of the seventeenth century, and a map of the Gulfs of Gaeta, Naples, and Salerno included in a miscellaneous volume on fortresses and architecture now in Naples, Biblioteca Nazionale (MS. XII.D.1), and recently published without any attribution (Leonardo Di Mauro, “Domus Farnesia amplificata est atque exornata,” *Palladio* 1 [1988]: 27–44, esp. 42 and fig. 27). This drawing has the same outline and dimensions (which I have measured) as this part of the coast as depicted on the first and second sheets of a sixteenth-century copy of Stigliola’s atlas. There are only a few small additions and changes to place-names, with the elimination of all the conventional symbols (ports, roads, fortresses, etc.).

112. See Fastidio, “Mario Cartaro,” 191.



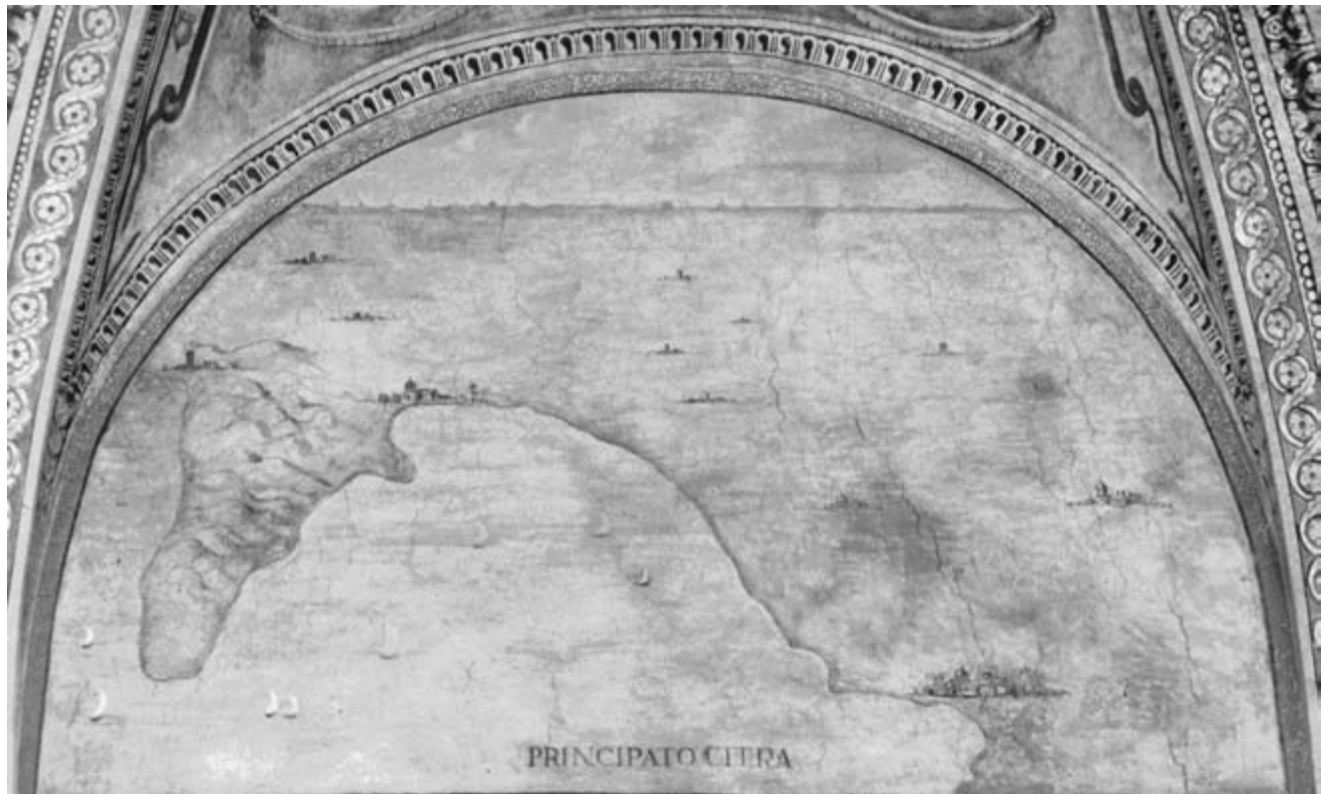


FIG. 37.19. FRESCO TITLED “PRINCIPATO CITRA” BY LUIGI RODRIGUEZ. This is in one of the lunettes of the refectory of San Lorenzo Maggiore in Naples, where the painter Rodriguez frescoed geographical maps representing the prov-

inces of the kingdom of Naples. Size of the original: 165 × 330 cm. Photograph courtesy of Vladimiro Valerio.

maps of the provinces of the kingdom and the royal strongholds in Tuscany by the artist Luigi Rodriguez, who was a pupil of Cavalier d’Arpino (fig. 37.19).<sup>115</sup> The work was commissioned by Enrique de Guzmán, second count of Olivares, who was viceroy from 1595 to 1599. His decision to have San Lorenzo decorated with geographical maps was in line with a trend that was widespread in Renaissance Italy, producing some works of outstanding quality in various buildings throughout the peninsula.<sup>116</sup>

with numerous Flemish scientists. His contact with one in particular, the mathematician François d’Aguillon, author of an important work on the theory of cartographic projection, would lead to the publication in 1612 of an extraordinary planisphere of twelve sheets, all drawn in stereographic polar projection (see Rodney W. Shirley, *The Mapping of the World: Early Printed World Maps, 1472–1700*, 4th ed. [Riverside, Conn.: Early World, 2001], 302–3 [no. 279], which reproduces the first version of 1612). Pisani himself wrote that his drawings put “within a circle the whole of the flattened globe, something that no one has done before” (letter from Ottavio Pisani to Galileo, Antwerp, 18 July 1614, published in Galileo Galilei, *Le opere di Galileo Galilei*, 20 vols., ed. Antonio Favaro [Florence: Barbèra, 1890–1909], 12:86–87). The best biography of Pisani remains that by Antonio Favaro, “Amici e corrispondenti di Galileo Galilei: Studi e ricerche (II. Ottavio Pisani),” *Atti del Reale Istituto Veneto di Scienze, Lettere ed Arti* 54 (1895–96): 411–40, complete with documents and previously unpublished letters; re-

published in Antonio Favaro, *Amici e corrispondenti di Galileo*, 3 vols., ed. Paolo Galluzzi (Florence: Salimbeni, 1983), 1:33–64. Pisani’s letters to Cosimo II de’ Medici, Galileo, and Kepler are published in Galilei, *Le opere*, 11:547–49, 564–65, and 579–81 and 12:86–87, 124, 148–49, and 176–77. The one letter to Giovanni Antonio Magini was published in Antonio Favaro, *Carteggio inedito di Ticone Brahe, Giovanni Keplero e di altri celebri astronomi e matematici dei secoli XVI. e XVII. con Giovanni Antonio Magini tratto dall’Archivio Malvezzi de’ Medici in Bologna* (Bologna: Nicola Zanichelli, 1886), 372–73, which contains the first reliable information on Pisani (pp. 147–50), in part taken up in the later biography.

115. On the end wall is the following inscription, enclosed within an ornate architectural frame:

PHILIPPO III. REGE  
FORVM AD PVBLICA REGNI NEGOTIA  
A CAROLO I. COSTRVCTVM  
TEMPORIS INIVRIA PENE COLLABENS  
FERNANDO RVIZ A CASTRO ET ANDRADE  
LEMONENSIVM ET ANDRADAE COMITE  
AC PROREGE IVBENTE  
REGIA IMPRESA REFECTVM EST  
ANNO DOM . M D C .

116. For a list of the buildings adorned with cartographic paintings, see Almagià’s work on the Vatican galleries, Roberto Almagià, *Monumenta cartographica Vaticana*, 4 vols. (Vatican City: Biblioteca Apostolica Vaticana, 1944–55), 3:11–12 and all of vol. 4, where Almagià completed his discussion of the subject. The theme of the cartographic mural cycles of the Renaissance is discussed in chapter 32 in this volume.

There must be some significance in the fact that Olivares had been ambassador to Rome from 1580 to 1582, the very years in which Egnazio Danti was completing Pope Gregory XIII's commission for a series of geographical maps to decorate the Belvedere Gallery in the Vatican.<sup>117</sup> The similarity between the decorative schemes (vaults frescoed with grotesques and walls with geographical maps), plus the closeness of the dates of the two projects, suggests that the viceroy took his inspiration from the Belvedere. However, given the different degrees of expert knowledge of the two artists—Danti was a cosmographer, while Rodriguez was a simple painter—it is no surprise that the maps in San Lorenzo are rather feeble images of the different provinces. Nevertheless, it is significant that such pictures should have been chosen as the decoration for the building that was to house the representatives of the Neapolitan parliament. Obviously, Stigliola's work offered a fine starting point and a solid basis for a figurative rendering of the provinces, even if his work was simplified—and sometimes totally ignored—by these sketchy pictorial representations, which were clearly intended to serve a very different purpose than his maps. We should be careful here not to confuse the role of the painter and that of the cartographer, given that the approach and aims of the two were very different.

Another contemporary example of decorative cartography is found in a world map in azimuthal projection carved into an ivory panel of a wooden writing desk. It bears the signature of the Neapolitan cartographer-engraver "Jannuvarius Picicaro fecit Anno 1597."<sup>118</sup> Two splendid writing desks now in the Museo di San Martino in Naples are probably by the same hand, or at least date from the same period (1619 and 1623): both of them have a front panel of ivory bearing an engraving of a planisphere in oval projection entitled "Nova totius terrarum orbis," taking up the Gastaldi model of 1546 that became common in the sixteenth century (fig. 37.20).<sup>119</sup> These writing desks reveal another significant aspect of the taste of the period, when maps might be used as decoration for entire rooms or appear as embellishments on more everyday objects. In the Renaissance, the biblical/historical cycles of medieval iconography were joined by another source of decorative motifs: geography.

#### MARIO CARTARO

In addition to his collaborative work with Stigliola, Mario Cartaro produced many compelling topographical works focused on the Naples area. These include the fine engravings of Campi Flegrei (1584) and of the island of Ischia (1586), the latter drawn to a scale of approximately 1:30,000, plus other works that were either direct or indirect models for successive prints and numerous drawings he produced as *ingegnere delineatore* (engineer

draftsman) and cartographer to the Giunta dei Regi Lagni. Cartaro held this latter post from 1589 to his death on 16 April 1620.<sup>120</sup> The first series of drawings, of "the entire Royal Canal," was made in 1590, while in 1594 Cartaro produced another work that is based on the partial surveys effected by the engineers working for the committee. These projects were carried out in consultation with Nicola Stigliola and Giovanni Battista Della Porta, who had been appointed to check the ground gradient of the canals and study the possibility of constructing new waterways. Over the following years, another ten drawings were made covering "the total layout of the canal system."<sup>121</sup> However, there is no extant trace of these works except a fair copy of one drawing dating from the first half of the seventeenth century.

Archival material from banks in the city shows that Mario's son, Paolo Cartaro, was also a very busy draftsman. Recent finds have revealed the following payments: on 12 March 1612, Claudio Spinola paid nine ducats to Paolo Cartaro "for the completion of the drawing of this kingdom," and on 13 October 1612, the duke of Atripalda issued a payment of nine ducats "to Paolo Cartaro, which is the value of the description of the Kingdom of Naples that he has sold and delivered to him."<sup>122</sup> Figure 37.21 shows Paolo Cartaro's manuscript "Regno di

117. See Almagià, *Monumenta cartographica Vaticana*, 3:1–11.

118. News of the Neapolitan writing desk, signed by Gennaro Picicaro and Giovanni Battista de Curtis, was given by Gonzáles-Palacios in 1975. The writer then returned to the subject of Neapolitan cabinets and the makers of such common objects of furnishing in Alvar Gonzáles-Palacios, *Il tempio del gusto: Le arti decorative in Italia fra classicismi e barocco, Roma e il Regno delle Due Sicilie*, 2 vols. (Milan: Longanesi, 1984), 1:237–47 and 2:182–92. Picicaro's planisphere is described and reproduced in Shirley, *Mapping of the World*, 219–21 (no. 200).

119. The two cabinets are identical in size and in many other features. A description of the cabinets, complete with a reproduction of the geographical plates on their panels, is to be found in Silvia Cassani, ed., *Civiltà del Seicento a Napoli*, 2 vols., exhibition catalog (Naples: Electa, 1984), 2:365–68.

120. Franco Strazzullo, *Architetti e ingegneri napoletani dal '500 al '700* (Naples: Benincasa, 1969), 63.

121. On Mario Cartaro's work as a cartographer, see the classic studies by Roberto Almagià, "Intorno a un cartografo italiano del secolo XVI," *Rivista Geografica Italiana* 20 (1913): 99–112, and Annie Luchetti, "Nuove notizie sulle stampe geografiche del cartografo Mario Cartaro," *Rivista Geografica Italiana* 62 (1955): 40–45, which, however, ignore his appointment as engineer and his manuscript output (with the obvious exception of the famous Naples atlas signed and dated 1613). For his work in Naples during this period, see Strazzullo, *Architetti e ingegneri napoletani*, 63–64. Further information on Cartaro can be gleaned from Giuseppe Fiengo, *I Regi Lagni e la bonifica della Campania felix durante il vicereame spagnolo* (Florence: Olschki, 1988), 85–94 and index. Entirely based on archival material, this work provides useful information on the other figures (engineers, land surveyors, and topographers) who were involved in land reclamation work.

122. Archivio Storico del Banco di Napoli, Banco del Sacro Monte della Pietà, Giornale copia polizze di cassa (Daily record of checks and bills cashed) 1612, c. 250v.

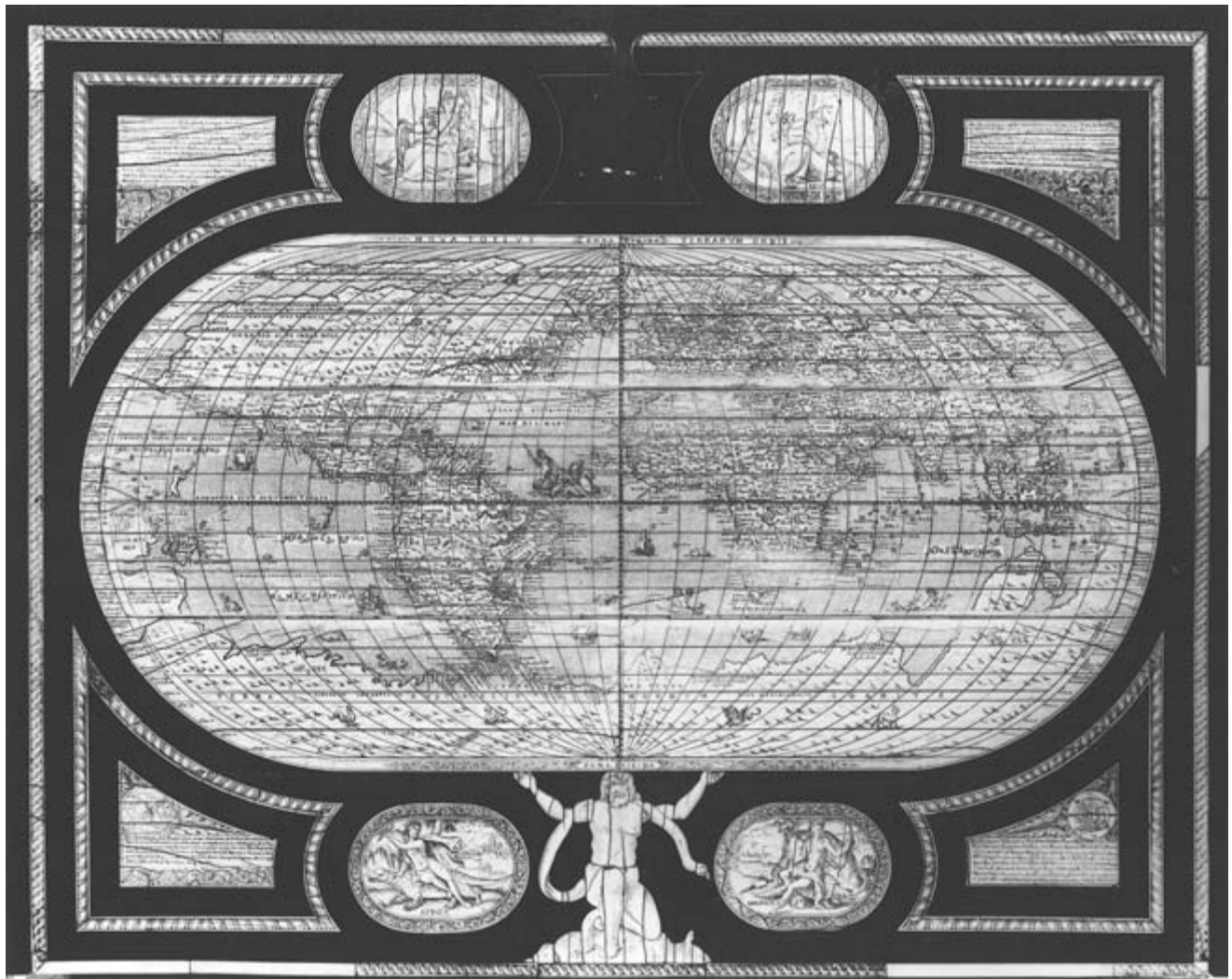


FIG. 37.20. “NOVA TOTIUS TERRARUM ORBIS.” World map in an oval projection engraved on ivory and mounted in a mahogany writing desk of Neapolitan manufacture, datable

to the beginning of the seventeenth century. Size of the original: 48.6 × 60.5 cm. Courtesy of the Museo Nazionale di San Martino, Naples.

Napoli,” 1642. Mario’s nephew Michelangelo, another engineer to the royal court,<sup>123</sup> was also involved in drawing maps of the kingdom. In 1617, he produced for Prince della Riccia a “Pianta del Regno di Napoli”—a work that was probably based on the late sixteenth-century maps of Stigliola and Cartaro.

Thanks to prints that made use of the material contained in the manuscript maps of Stigliola and Cartaro, their manuscript cartography did not suffer the same obscurity as the Aragonese maps, which had a low survival rate. One map of the entire canal system in Campania Felix was engraved in 1616 by Alessandro Baratta. Included in Garcia Barrionuevo’s *Panegyricus* and dedicated to Pedro Fernandez de Castro, count of Lemos, this became a veritable prototype for depictions of the Bay of Naples area.<sup>124</sup> For its part, the entire Stigliola-Cartaro survey of the provinces of the kingdom was used by Gio-

vanni Antonio Magini in drawing up the maps of southern Italy for his atlas of Italy, which was published posthumously by his son in Bologna in 1620.

In 1601, Magini had somehow managed to obtain a copy of the maps of the Naples area that had been commissioned by the government,<sup>125</sup> and even now it is argued that he must have extensively revised the material origi-

123. See Strazzullo, *Architetti e ingegneri napoletani*, 65.

124. See Pane and Valerio, *La città di Napoli*, 89–90 (by Vladimiro Valerio).

125. See Almagià’s introduction to Giovanni Antonio Magini, *Italia: Bologna 1620*, ed. Fiorenza Maranelli, intro. Roberto Almagià (Amsterdam: Theatrum Orbis Terrarum, 1974), V–XXI, esp. XVI, where he quotes a letter from Magini to Alessandro Striggio of 27 March 1602; the letter is published in Favaro, *Carteggio inedito di Ticone Brahe*, 437–38.



FIG. 37.21. MAP OF THE KINGDOM OF NAPLES BY PAOLO CARTARO, 1642. From a manuscript edition. Drawn and signed by Cartaro.

Size of the original: 37.5 × 63.6 cm. Photograph courtesy of the National Library of Malta, Valletta (MS. 1029).

nally produced by Stigliola and Cartaro. However, as early as 1922, Almagià perceptively observed: “The features that appear in most of the Magini maps are such that they suggest new on site surveys.” It is certain that the “new version [of the Stigliola map], improved and completed as the result of new surveys,” that Almagià suggested was produced<sup>126</sup> did actually exist—as is proved by an eighteenth-century copy of an atlas by Cartaro that can be dated somewhere between 1595 and 1605 (fig. 37.22).<sup>127</sup> The discovery of this later copy not only clarifies the nature of Magini’s debt to the two Neapolitan cartographers, but also casts an interesting light on the innovations introduced by Cartaro himself, who had always mistakenly been considered a rather secondary figure in the whole operation, as little more than a copyist.<sup>128</sup> And this undervaluation of the work of Stigliola and Cartaro has resulted in an assessment of the Magini maps of southern Italy as

127. The description and catalog references for the individual sheets were kindly supplied by Colonel Angel Paladini Cuadrado of the Sección de Documentación del Servicio Geográfico del Ejército, Madrid. The maps are in the Cartoteca Histórica del Servicio Geográfico del Ejército, Madrid, and identified by the following numbers: no. 92, “Abruzzo Ultra,” 43 × 60 cm; no. 93, “Contado di Moliso,” 34 × 54 cm (under the scale bar is written “Mario Cartaro f.”); no. 94, “Abruzzo Citra,” 34 × 54 cm; no. 97, “Capitanata,” 43 × 60 cm; no. 98, “Terra di Bari,” 32 × 60 cm (under the scale bar is written “Mario Cartaro f.”); no. 99, “Terra d’Otranto,” 32 × 60 cm; no. 104, “Basilicata,” 34 × 58 cm; no. 106, “Calabria Citra,” 43 × 60 cm; no. 107, “Calabria Ultra,” 32 × 60 cm; no. 111, “Terra di Lavoro,” 43 × 60 cm (under the oval framing is written “Mario Cartaro f.”); no. 112, “Principato Citra,” 34 × 54 cm; no. 113, “Principato Ultra,” 32 × 60 cm; and no. 275, “Presidii di Toscana,” 34 × 54 cm. The maps all include a scale showing ten Italian miles equal to 55 mm (a scale of ca. 1:336,000). Maps 92, 94, 97, 98, 104, 107, 112, and 113 bear wind roses similar to those present in the copy of the Stigliola atlas now in a private collection.

128. There is a surprising similarity between the maps now in Madrid (see previous note) and those published by Fabio Magini in 1620. The claim that Cartaro copied from Magini seems to be refuted first of all by a comparison of dates (he died the very year Magini’s atlas was published). What is more, one finds it difficult to understand why Magini should have had more cartographic information relating to the kingdom of Naples than Cartaro, an engineer who had been appointed and was paid for “drawing and charting in plans all sites and layouts within this Realm.” The atlas in Spain contains one truly exceptional sheet, depicting the area of Otranto: for the first time the form of the end part of the Salentine Peninsula is given, outlined and completed in great detail.

126. Roberto Almagià, *L’“Italia” di Giovanni Antonio Magini e la cartografia dell’Italia nei secoli XVI e XVII* (Naples: F. Perrella, 1922), 77. Unfortunately, these comments have not been given due attention, and the literature tends to preserve the commonplace that Magini made remarkable improvements to the maps in the atlases of Stigliola and Cartaro.

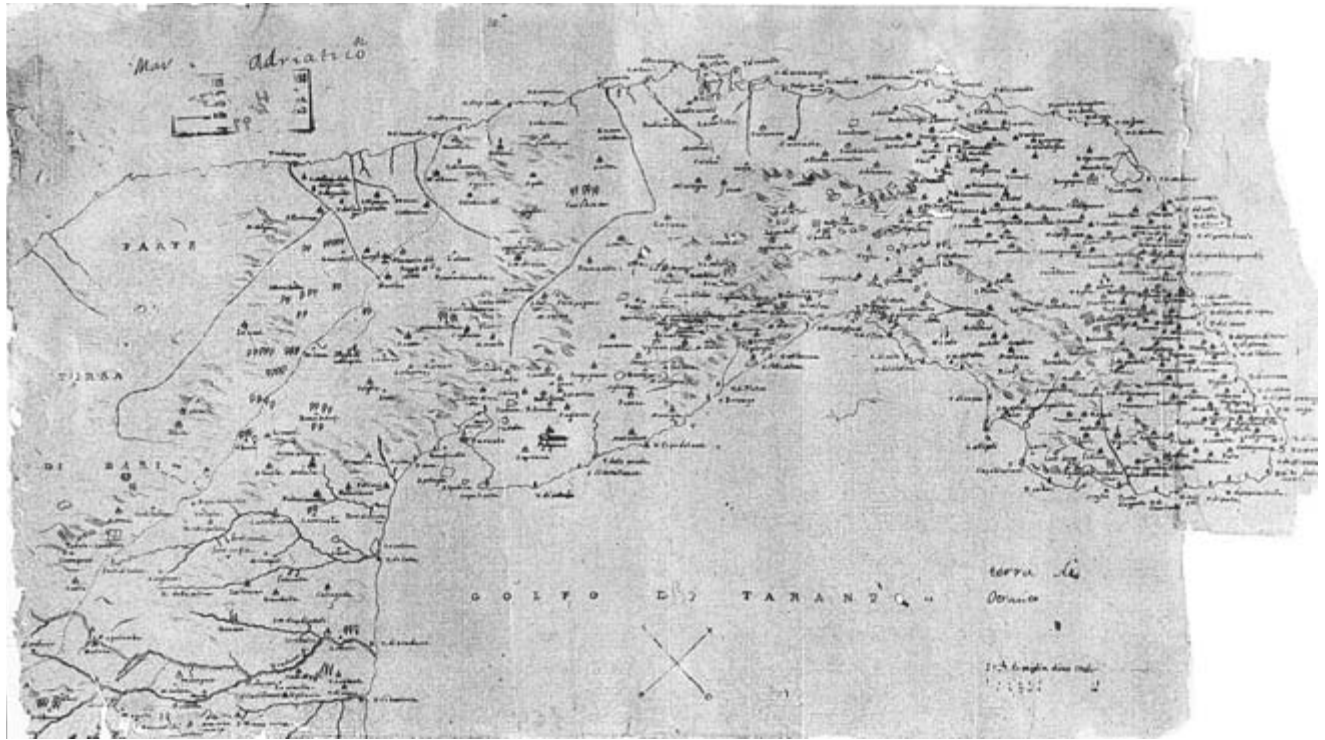


FIG. 37.22. “TERRA DI OTRANTO” BY MARIO CARTARO (EIGHTEENTH-CENTURY COPY). The discovery of an eighteenth-century copy of an atlas of the kingdom of Naples by Mario Cartaro throws new light on the standing of this cartographer and on his influence on subsequent works. This map of the “Terra di Otranto” differs considerably from that in the Stigiola atlas (including the copies of that atlas produced by Mario Cartaro and Paolo Cartaro). The outline and

geography as depicted in this eighteenth-century copy are very similar to those found in the atlas of Italy published in 1620 by Magini, who must certainly have used Cartaro’s work as a source.

Size of the original: 32 × 60 cm. Photograph courtesy Spain, Ministerio de Defensa, Archivo Cartográfico y de Estudios Geográficos del Centro Geográfico del Ejército, Madrid (Italia n. 99).

“the finest in the whole collection [of the 1620 atlas]” precisely because “the overall improvement on previous maps of [the same area] is greater than that that can be found in any of the other maps [in the atlas].”<sup>129</sup>

### THE MAP BY GIOVANNI BATTISTA NICOLOSI

Maps drawn up to meet specific social needs—works that reflect the more general processes of Neapolitan economic and social growth—suffered as the result of the cultural downturn in the early years of the seventeenth century. Similarly, military matters were no great generators of new knowledge and know-how in southern Italy, where war was primarily felt as a destabilizing economic influence due to the increased fiscal pressure it caused the Spanish court to apply.<sup>130</sup> During this period, the kingdom of Naples was never the object of military conquest; its fate was generally decided by diplomatic negotiations, and when in 1734 Charles III of Spain did seize the kingdom by force of arms, the gesture marked a clear break with the past.

129. Almagià, *L’“Italia” di Giovanni Antonio Magini*, 78.

130. Villari comments that “Naples’ role had changed since the days of Philip II; from being a key component in a political-military system that spread across the Mediterranean, it had been increasingly transformed into a source of supplies and finance for the wars Spain was fighting elsewhere on the continent”; see Rosario Villari, *La rivolta antispagnola a Napoli: Le origini (1585–1647)*, 2d ed. (Bari: Laterza, 1980), 123. Certainly, one cannot consider as an example of military cartography the view produced by Alberico de Cuneo in celebration of the “Fidelis Puteolorum Civitas,” which in June 1648 had withstood the threat posed by the French fleet. Totally without scale, the drawing shows Naples from the southwest, nestling between a landscape and a coastline that are totally inaccurate. In fact, Alberico admits his own unfamiliarity with cartography in the handwritten comment “Non habeo ingenium.” On this map by Alberico de Cuneo, acquired by the BNF in 1914 (Rés. Gé C 4402) and known to the public and scholars since 1917, see the detailed description in Roger Hervé, Henri Hugonnard-Roche, and Edmond Pognon, *Catalogue des cartes géographiques sur parchemin conservées au Département des Cartes et Plans* (Paris: Bibliothèque Nationale, 1974), 56–57. Nothing is known about the author, who may have been a member of the Cuneo family of Savona, for a Michele de Cuneo took part in Christopher Columbus’s second voyage in 1493–96; see Rinaldo Caddeo, ed., *Relazioni di viaggio e lettere di Cristoforo Colombo (1493–1506)*, 2d ed. (Milan: V. Bompiani, 1943), 330. Similarly, the view of Naples by Jan Verhoeven, printed in

Nevertheless, military maps were hailed by the soldier and cartographer Luigi Ferdinando Marsigli (Marsili, Marsilio) as the most exact form of cartography because “[their] root is not to be found in men who dash around the region like vagabonds but in those who measure it with the compass of the military, which is infallible.”<sup>131</sup> A military event indirectly caused the large map of the Naples area to be produced by Giovanni Battista Nicolosi, as the author himself explained in his preface to his *Guida allo Studio Geografico*: “In the year 1654, during the war, I drew up a large description of the kingdom of Naples, explained in a single rich picture.”<sup>132</sup> The war he was referring to was that between France and Spain, which dragged on after the Treaty of Westphalia put an end to the Thirty Years War but failed to establish peace between these two historic rivals. This continuing situation of latent war gave rise to such incidents as the failed French naval attack on Naples in November 1654 (which was no more successful than the previous attempts in 1640).<sup>133</sup>

It was in this climate of heightened tension between Spain and France that Nicolosi presented to Philip IV of Spain and his ally Leopold of Austria (who was then archduke but would become Hapsburg emperor in 1658) his “rich picture,” measuring  $8 \times 12$  palmi (ca.  $2 \times 3$  m), which, he informs us, “he fixed . . . to the wall, so that the sense of the work could be more easily and pleasantly displayed.”<sup>134</sup> The military purpose behind the map was made clear in the letter accompanying the map that Nicolosi wrote to Leopold in November 1655: the geographical map and booklet “show how said kingdom can be attacked and defended from within and from without.”<sup>135</sup>

There is no copy of Nicolosi’s map, though there are what may have been the stencils for some sheets<sup>136</sup> used in making the three copies that Nicolosi says were made for three viceroys: Garcia de Avellande, count of Castrillo; Gaspar de Bracamonte y Guzmán, count of Peñaranda; and Pasquale d’Aragona, archbishop of Toledo.<sup>137</sup> However, if one is to judge by his surviving manuscripts (fig. 37.23) and by the plan he drew up for the improvement of existing maps of the kingdom, as well as by the three stencils that have come to light (clearly based on his

della geografia,” in *Atti dello XI Congresso Geografico Italiano*, 4 vols. (Naples, 1930), 2:274–76. On Marsigli himself, see Franco Farinelli, “Multiplex Geographia Marsilii est difficillima,” in *I materiali dell’Istituto delle Scienze* (Bologna: CLUEB, 1979), 63–74, and “Marsigli, Luigi Ferdinando,” in *Lexikon*, 2:466–67 with bibliography. For a general picture and methodological outline of military cartography, see “Militärkarte, Militärkartographie,” in *Lexikon*, 2:495–98.

132. Giovanni Battista Nicolosi, *Guida allo studio geografico* (Rome: Vitale Mascardi, 1662), preface (unnumbered). On G. B. Nicolosi, see the first fundamental biographical study in Gaetano Savasta, *Della vita e degli scritti di Giambattista Nicolosi . . .* (Paternò: Tipografia Placido Bucolo 1898), which uses the 1670 biography and other previously unpublished material. Savasta was the first to cite the manuscripts in Rome, Biblioteca Casanatense. The most recent work to sum up all our current knowledge regarding Nicolosi is Salvo Di Matteo, *Un geografo siciliano del XVII secolo: Giovan Battista Nicolosi* (Paternò: Centro Studi “G. B. Nicolosi,” 1977). On the map of Naples, Luisa Spinelli’s “La carta del Reame di Napoli di Giovan Battista Nicolosi,” in *Atti dello XI Congresso Geografico Italiano*, 4 vols. (Naples, 1930), 2:351–54, is still useful, although Di Matteo does not cite it.

133. In November 1654, a French fleet dropped anchor off Castellamare in the Gulf of Naples and then landed troops under the command of Henri de Lorraine, fifth duc de Guise. After having pushed inland as far as Angri and Scafati, the French were obliged to retreat a few days later.

134. Giovanni Battista Nicolosi, *Hercules Sicvlvs sive Studium geographicvm*, 2 vols. (Rome: Michaelis Herculis, 1670–71), text and atlas, quotation from vol. 1, “Vitae auctoris breuiarum” (unnumbered).

135. Draft of a letter from Nicolosi addressed to “Leopoldo I Re d’Ungharia,” dated 30 November 1655 (Rome, Biblioteca Casanatense, MS. 674, f. 102r); the letter is mentioned for the first time in Savasta, *Della vita*, 58–60. On the Nicolosi manuscripts in the Biblioteca Casanatense, see Savasta, *Della vita*, 52–60 and 97–99, and Anna Saitta Revignas, comp., *Catalogo dei manoscritti della Biblioteca Casanatense*, vol. 6 (Rome: Istituto Poligrafico della Stato, 1978), 181–84, regarding manuscripts 674, 675, and 676. There are another two Nicolosi manuscripts in the Biblioteca Casanatense: no. 1370, “Ragione dell’architettura militare,” consisting of 241 numbered sheets plus two unnumbered sheets of index, and no. 5236, “Trattato geografico,” consisting of 208 numbered sheets with an index on fols. 206r–7r. The *Catalogo*, p. 182, gives an inaccurate and incomplete description of manuscript 674. For a detailed, accurate description, see Valerio, *Società uomini*, 64 n. 103.

136. The three stencils I have identified are in the Sezione Manoscritti e Rari of the Biblioteca Nazionale, Naples, and are cataloged as follows: b. 29A/55, covering the provinces of Bari and Basilicata,  $48.5 \times 74$  cm; b. 29A/56, covering Capitanata and Principato Ultra,  $47.5 \times 74$  cm; b. 29A/58, covering Abruzzo Citra and the contado of Molise,  $48 \times 74$  cm. The three sheets of thick paper bear no traces of drawing but have lines of pinholes; thus, the outlines are visible only when the sheet is held up to the light. One side of each sheet is blackened by the powder used in transferring the outline to another sheet of paper. For the use of this technique, see Henri Gautier, *L’arte di acquerellare: Opera del Signore H. Gautier di Nismes* (Lucca: Rocchi, 1760), 96–101, and Bartolomeo Crescenzio (Crescentio), *Nautica Mediterranea* (Rome: Bonfandino, 1607), 189. The three sheets can be joined together to form a map of most of Abruzzo and Terra di Lavoro, together with Capitanata, Terra di Bari, and Basilicata. The projection is trapezoidal, and the scale, calculated on the basis of the measurement of one degree of latitude, is about 1:360,000. To this scale, the entire kingdom of Naples could be depicted on a single plate of  $150 \times 250$  centimeters, which, complete with frame, would about equal the size of Nicolosi’s map ( $200 \times 300$  cm). For sheet 29A/58, I have found the original drawing used in making the stencil: Naples, Biblioteca Nazionale, b. 4A/57.

137. Nicolosi, *Hercules Sicvlvs*, “Vitae auctoris breuiarum” (unnumbered).

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Antwerp by Martin Binnart in 1648 (and reengraved in Rome by Pietro Miotte the same year, or at least bearing the same date), cannot be considered an example of military cartography, even if it does show the various phases of the Spanish reconquest of the city after the 1647 revolt. In both cases, we have maps that deal with military-political events but from a hagiographic or didactic point of view. They have very little in common with the cartography of military engineers.

131. Quoted in Giovanni Natali, “Uno scritto di Luigi Ferdinando Marsili su la riforma della geografia,” in *Memorie intorno a Luigi Ferdinando Marsili, pubblicate nel secondo centenario dalla morte per cura del comitato marsiliano* (Bologna: Zanichelli, 1930), 221–32, esp. 231. For Marsigli’s text on the reform of geography, see also Giovanni Natali, “Una prefazione inedita del Conte L. F. Marsili ad una sua riforma



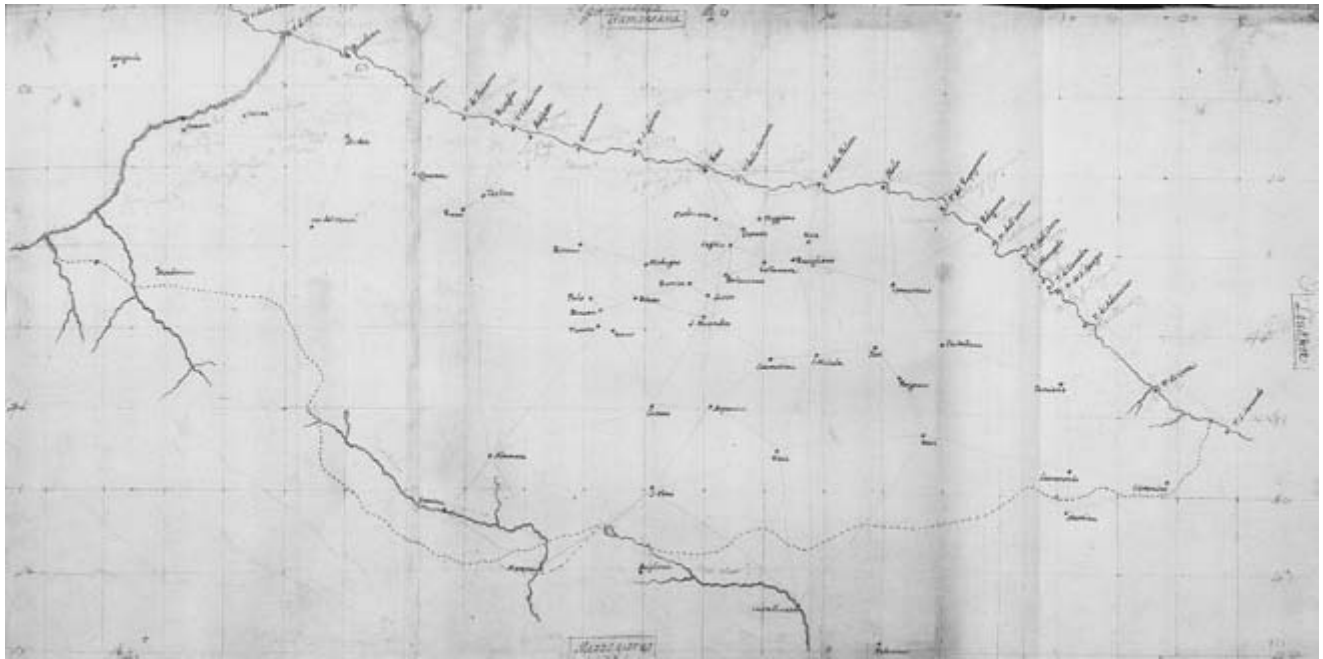


FIG. 37.23. DRAWING OF THE TERRA DI BARI. This pencil drawing, taken from the manuscript papers of Giovanni Battista Nicolosi, is perhaps the only manuscript that enables us to assess the value of the work he himself put into his large

map of the kingdom of Naples (1654).

Size of the original: 30.4 × 60.7 cm. Biblioteca Casanatense, Rome (MS. 674, fol. 171). By concession of the Ministero per i Beni e le Attività Culturali.

map, even if not drawn by Nicolosi himself), it is obvious that his “rich picture” did not mark any important cartographic advance. Nicolosi’s work is undoubtedly overrated: his entire project was flimsy and based on weak documentary and descriptive source material, without any specific astronomical observations or measurements (for example, with regard to the distances between towns, he suggested using “the information obtained from a person familiar with them”).<sup>138</sup>

The general description of the kingdom and of its twelve provinces in the manuscript by Nicolosi follows the structure of (and sometimes copies the data in) the volume *Il Regno do Napoli diviso in dodici provincie*, which had been such a publishing success and continued to be reprinted right up to the end of the seventeenth century (with some additions and alterations).<sup>139</sup> In its turn, the text—the work of Pietro Antonio Sofia—seems to correspond perfectly with the chorographical plates in the Stigliola-Cartaro atlas: the provinces appear in the same order, and there is fairly extensive agreement in the lists of ports, fortresses, towers, and royal cities. It is probable that Sofia’s text, first published in 1614, was originally intended to accompany the atlas of the provinces engraved by Cartaro in 1611 and dedicated to the count of Lemos.<sup>140</sup> Hence, Nicolosi’s work contains no advance on the geographical data already available in the last decade of the sixteenth century. It is impossible to agree that this was “an almost thirty-year project,” or that, as Spinelli

has argued, Nicolosi “took great care over improvements and up-dates, because the Biblioteca Casanatense manuscripts . . . are full of corrections and additions.”<sup>141</sup> In effect, apart from quite marginal corrections (relating to feudal lords or to place-names), the only substantial addition in the previously mentioned manuscripts relates to the number of fires that had occurred in the year 1669. And the tables of latitude and longitude, which Nicolosi claimed to have compiled “by restoring the, now almost ignored, method of the Prince of Geographers [i.e., Ptolemy],”<sup>142</sup> may have been intended to give the whole

138. Rome, Biblioteca Casanatense, MS. 674, fol. 105r.

139. See Pietro Antonio Sofia, *Il Regno di Napoli diviso in dodici provincie . . . , raccolto per Pietro Antonio Sofia napolitano* (Naples: Lazzaro Scoriggio, 1614); republished in 1615 by Enrico Bacco, who also produced a 1620 edition in which the name of Sofia disappeared entirely. For the editions of this important work, see Marco Santoro, ed., *Le secentine napoletane della Biblioteca Nazionale di Napoli* (Rome: Istituto Poligrafico e Zecca dello Stato, 1986), 86. The following compares some passages in Nicolosi and Sofia: “In traveling around it by sea from cape to cape, one covers 1568 [miles]” (MS. 764, fol. 101r) versus “Its circuit is 1468 miles” (*Regno di Napoli*, 2); “There are a total of 1981 cities, estates and castles” (MS. 674, fol. 101r) versus “In this kingdom there are cities and castles to the total one thousand nine hundred and eight-one” (*Regno di Napoli*, 3).

140. See Valerio, *Società uomini*, 50 n. 63.

141. Spinelli, “La carta del Reame,” 353.

142. Rome, Biblioteca Casanatense, MS. 674, fol. 103r, letter from Nicolosi to Leopold; obviously, the reference is to the Alexandrian geographer and astronomer Claudius Ptolemy.

work an air of scientific rigor, but are, in fact, rather crude, with contradictions between the various manuscript and printed copies and no adequate reasoning behind the inclusion/exclusion of data.<sup>143</sup>

A century later, Jean-Baptiste Bourguignon d'Anville would make a similar but much more successful attempt to update the map of Italy, yet he was using much more finely honed critical tools. In short, the entire Nicolosi map seems to embody the very opposite of the new conception of science being advanced by Galileo, who argued for the primacy of empirical experience over *a priori* formulas, of direct observation over abstract theory. It may be useful here to recall that Nicolosi—perhaps for reasons of expediency—had in 1642 claimed that “the whole universal machine of the heavens turns around the earth under its own indefatigable motion.”<sup>144</sup>

### CONCLUSION

Between the founding of the kingdom of the Two Sicilies (Sicily and Naples) of the house of Aragon in 1443 and the middle of the seventeenth century, cartography in the Mezzogiorno region of the Italian peninsula was characterized by a lack of continuous development. Maps were produced to meet specific, sometimes idiosyncratic, needs and address specific events in a series of closed economies, whether dealing with boundaries, towns, fortification, canalization, or sheepherding. Such military and economic factors do not explain the whole of cartography in the region, however. At the Aragonese court, particularly during the reign of Alfonso V, a concern for astronomy, geodesy, and topographic measurement reveals a desire to compete with the other European courts in the support of science. A series of maps on parchment, known only through copies made in the eighteenth century by Ferdinando Galiani, appear to have been made in the late fifteenth century according to methods requiring angular surveying instruments that are normally associated with the sixteenth century. I hypothesized that these maps may have been associated with Antonio De Ferraris, who was active as a cosmographer at the Aragonese court.

A concern for the administration of the kingdom of Naples and its principal city may have driven the production of three important town plans of Naples (by Carlo Theti, 1560; Etienne Du Pérac, 1566; and Alessandro Baratta, 1627) and a manuscript chorographical map of the kingdom by Nicola Antonio Stigliola and Mario Cartaro in the last quarter of the sixteenth century. The latter may also have enhanced the image of the kingdom by serving as a “national map” of the kind that other European states were compiling.

The promise of the capacities, output, and circulation that Neapolitan cartography offered at the end of the sixteenth century failed to materialize. Several factors con-

tributed to this stagnation: the deaths of Della Porta, Cartaro, and Stigliola (in 1615, 1620, and 1623, respectively); the subsequent collapse of the Neapolitan Accademia that had been so energetically promoted by Federico Cesi;<sup>145</sup> the failure to set up the astronomical observatory so earnestly desired by Stigliola; and the general stagnation of scientific inquiry in southern Italy as a whole.

During the seventeenth century, the kingdom of Naples passed through a general social and intellectual crisis that resulted in the city's suffering some isolation from the political and social life of Italy and the rest of Europe. While elsewhere “internal equilibrium was maintained [in spite of temporary difficulties] and a certain stagnation did not lead to a total turn-around in development,”<sup>146</sup> Naples did seem to be afflicted by such a reversal of development; this can also be seen in the city's cartography, which reveals a general lack of interest in producing more modern and efficient means of territorial description and representation. If we look, for example, at the work of the “compassmen” of the Neapolitan Regia Dogana delle Pecore, whose cartographic works were produced through the modern era to the end of the eighteenth century, we see that it never achieved the standard of draftsmanship and metrical accuracy necessary for it to serve as a basis for a tradition of land surveying. What is more, one should remember that almost none of the drawings produced by the compassmen of the Regia Dogana in the fifteenth and sixteenth centuries have come down to us.<sup>147</sup>

143. The following is a comparative list of the coordinates of some places. The first are taken from MS. 674 in the Biblioteca Casanatense, the second from Nicolosi, *Hercules Sicvlvs*, 1:97:

Manfredonia	35.25–41.50	35.00–41.20
Vieste	35.25–42.40	35.20–41.40
Termoli	34.25–42.20	34.20–42.00
Bovino	34.35–41.30	34.40–41.20

What is more, in Nicolosi, *Hercules Sicvlvs*, 1:102, the coordinates given for Naples are 33.20–41.0, the same as those for Acerra. As far as Nicolosi was concerned, places near each other might as well be given the same coordinates!

144. Giovanni Battista Nicolosi, *Teorica del globo terrestre: Et esplicatione della carta da nauigare* (Rome: Manelfo Manelfi, 1642), 14.

145. On the generally conflictual relationship between Cesi and Della Porta, and their different aims, see Giuseppe Olmi, “‘In essercitio universale di contemplatione, e prattica’: Federico Cesi e i Lincei,” in *Università, Accademie e Società scientifiche in Italia e in Germania dal Cinquecento al Settecento*, ed. Laetitia Boehm and Ezio Raimondi (Bologna: Il Mulino, 1981), 169–235, esp. 221–23. On the Naples Accademia dei Lincei, see the classic study in Giuseppe Gabrieli, *Il Carteggio Linceo della vecchia Accademia di Federico Cesi (1603–1630)* (Rome: Dott. Giovanni Bardi, tipografo della R. Accademia Nazionale dei Lincei, 1938; reprinted 1996), and the more recent Giuseppe Olmi, “La colonia lincea di Napoli,” in *Galileo e Napoli*, ed. Fabrizio Lomonaco and Maurizio Torrini (Naples: Guida, 1987), 23–58.

146. Villari, *La rivolta antispagnola a Napoli*, 5.

147. On the cartography produced for customs authorities, which to a large extent dates from after the period I am discussing, see the essays

The flimsiness of scientific culture in seventeenth-century Naples, especially its continuing possession of occult or cabalistic overtones,<sup>148</sup> together with the kingdom's general isolation from the scientific thought of Italy and the rest of Europe, is reflected in the output and quality of the Neapolitan cartographers.<sup>149</sup> The early years of the seventeenth century were precisely the period when mathematical and technical advances in the rest of Europe were marking the passage from "the universe of approximation to the universe of precision,"<sup>150</sup> with the result that the determination and representation of a place's location on the globe were becoming less and less vague. In 1599, Edward Wright, a Cambridge mathematician and the colleague of such figures as John Napier and Henry Briggs, published his *Certain Errors in Navigation*, which included formulas and tables for the exact construction of the projection proposed by Gerardus Mercator in his world map of 1569.<sup>151</sup> Similarly, Willebrord Snellius (Snel van Royen)—a reader in mathematics and astronomy at Leiden, who had contacts with Tycho Brahe and Johannes Kepler—carried out the first modern geodetic triangulation in order to establish the true size of the earth, publishing his results in 1616.<sup>152</sup> The fixing of terrestrial positions by means of stellar coordinates was becoming more and more widespread due to the great voyages of exploration and the stimulus to science arising from the discovery in the southern seas of constellations totally unknown to the ancients. But in Naples, cartography and astronomy would make contact again only in the last two decades of the eighteenth century, when regular topographic surveying got under way once more.

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and references in Gregorio Angelini, ed., *Il disegno del territorio: Istituzioni e cartografia in Basilicata, 1500–1800*, exhibition catalog (Rome: Laterza, 1988), in particular Pasquale Di Cicco's "I compassatori della Regia Dogana delle Pecore," 10–17.

148. On astronomy in seventeenth-century Naples, see Giovanna Baroncelli, "L'astronomia a Napoli al tempo di Galileo," in *Galileo e Napoli*, ed. Fabrizio Lomonaco and Maurizio Torrini (Naples: Guida, 1987), 197–225. Baroncelli argues that the new astronomy that became established in Naples in the early years of the seventeenth century "brought with it a physics of sympathetic and repulsive forces, which was still partly Renaissance" (p. 200). On astronomy and the places in southern Italy where it was practiced during the second half of the sixteenth century, see Ugo Baldini, "La conoscenza dell'astronomia coper-

nicana nell'Italia Meridionale anteriormente al Sidereus Nuncius," in *Atti del Convegno "Il Meridione e le Scienze,"* ed. Pietro Nastasi (Palermo: Istituto Gramsci, 1988), 127–68.

149. A clear outline of the whole problem of science in southern Italy during the seventeenth and eighteenth centuries is to be found in Giuseppe Galasso, "Scienze, istituzioni e attrezzature scientifiche nella Napoli del Settecento," in *L'età dei Lumi: Studi storici sul Settecento Europeo in onore di Franco Venturi*, 2 vols. (Naples: Jovene, 1985), 1: 191–228, esp. 193–97. A recent study of a manuscript in Naples, Biblioteca Nazionale, which Gatto attributes to the Neapolitan Davide Imperiali (Romano Gatto, "Un matematico sconosciuto del primo seicento napoletano: Davide Imperiali [Con un'appendice di lettere e manoscritti inediti]," *Bollettino di Storia delle Scienze Matematiche* 8 [1988]: 71–135), throws some light on the state of scientific disciplines in seventeenth-century Naples. The painstakingly written treatise (Naples, Biblioteca Nazionale, MS. XII.D.64) dates from midcentury and deals with applied geometry (what today we would call land surveying or topography). One of the nine "treatises" of which it is composed describes the instruments to be used for the measurement of lines, surface area, distance, and gradient. Most of the chapters, from the second to the seventh, discuss these problems of measurement, surveying, and scale drawing with particular reference to the military field. The fourth treatise, for example, discusses how to "survey the layout of a fortress without getting close to it and thus risking attack" (fol. 78). Imperiali also teaches how to use radiating lines in surveying, using the vertices of a specially chosen and measured polygon. However, if on the one hand this work suggests that modern knowledge and methods were present in Naples during this "dark" period, it leaves unanswered the question as to how well known or widespread it and similar treatises actually were. To what extent did they reflect the usual everyday practice?

150. Maria Luisa Altieri Biagi and Bruno Basile, eds., *Scienziati del Seicento* (Milan: R. Ricciardi, 1980), 4, introductory note on Federico Cesi by Bruno Basile, who is talking about Cesi's "conversion to Galileo," but the phrase is a fine summary of the scientific climate at the turn of the century.

151. Mercator made only brief reference to the actual construction of the map. Wright treated it as a mathematical problem. On Mercator, see the biography with ample bibliography in "Mercator, Gerard," in *Lexikon*, 2:485–87. On Wright, see also *The World Encompassed: An Exhibition of the History of Maps Held at the Baltimore Museum of Art October 7 to November 23, 1952*, exhibition catalog (Baltimore: Trustees of the Walters Art Gallery, 1952), nos. 166–67 and pl. XLV; Carl B. Boyer, *A History of Mathematics* (New York: Wiley, 1968), 329; and, on the special characteristics of his cartography, Lloyd Arnold Brown, *The Story of Maps* (Boston: Little, Brown, 1949), 136–39. On the Mercator projection and its contemporaries, see Numa Broc, *La géographie de la Renaissance (1420–1620)* (Paris: Bibliothèque Nationale, 1980), 173–77; Matteo Fiorini, *Le proiezioni delle carte geografiche*, 1 vol. and atlas (Bologna: Zanichelli, 1881), which remains useful (esp. 368–72); and also John Parr Snyder, *Flattening the Earth: Two Thousand Years of Map Projections* (Chicago: University of Chicago Press, 1993), 43–49.

152. See Haasbroek, *Gemma Frisius*, 59–115.