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Source: *Journal of the Society of Architectural Historians*, Vol. 46, No. 2 (Jun., 1987), pp. 119-134

Published by: [University of California Press](#) on behalf of the [Society of Architectural Historians](#)

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# “Dal disegno allo spazio”: Michelangelo’s Drawings for the Fortifications of Florence

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Since Charles de Tolnay first published them in 1940, Michelangelo’s drawings for the fortifications of Florence have stimulated considerable scholarly interest. Tolnay likened the zoomorphic shapes of Michelangelo’s sketches to crustaceous creatures. The analogy has become a commonplace, and while helping to describe the formal appearance of these unexpected designs, it has led most scholars to question their purpose and practicality. Furthermore, every scholar has followed Tolnay’s general view that the series proceeds from the simple to the complex, with the drawings becoming increasingly abstract and fantastic. This paper proposes that Michelangelo’s process of design was exactly the opposite. Beginning with abstract and complex ideas, Michelangelo proceeded to develop and refine his conceptions in a series of drawings that reflect a rational process of design. This hypothesis is more in accord with the historical facts and the documentary evidence and is based on a close analysis of the drawings themselves. The 20 sheets preserved in the Casa Buonarroti are evidence of Michelangelo’s practical concern with particular problems of Florence’s defense in 1528–1529 and represent the first stage of his successful activity as a military engineer for the Republic.

SHORTLY AFTER news of the Sack of Rome arrived in Florence in May 1527, the Medici were expelled from the city and a republican government was reestablished. Pope Clement VII, a Medici scion and former papal legate of Tuscany, felt betrayed by his native city. During the next three years, one of the major objectives of Clement’s diplomacy was to reinstate his family and to ensure their future security in Florence. In the Treaty of Barcelona signed in June 1529, the Holy Roman Emperor, Charles V, acceded to Clement’s insistence that the republican government in Florence be suppressed and Medici

This article is adapted from my doctoral dissertation on Michelangelo’s drawings. I presented a shorter version of this paper at the annual meeting of the College Art Association in New York in February 1982. I would like to thank Columbia University for two travel grants that permitted me to complete this study, and I am grateful to Sir John Hale, David Rosand, Howard Hibbard, Samuel Heath, and Sarah Schroth for reading early drafts. I would also like to extend my sincere thanks to Paola Barocchi and Pina Ragionieri for granting me permission to study the original drawings of Michelangelo in the Casa Buonarroti and to Paola Squellati Brizio for many helpful discussions concerning them.

control reinstated. The reconciliation between the two leaders of Christendom not only dashed Florentine hopes for separate negotiations with Charles, but it also signified that the city would have to defend her liberty against the combined forces of the Pope and the Holy Roman Emperor.<sup>1</sup>

Even prior to the signing of the Treaty of Barcelona, Florence had begun preparing for the eventuality of war. In mid-1528 the committee of nine on military affairs, the *Nove della Milizia*, was established in order to “repair the walls and towers, to construct bastions, and finally, to fortify when and wherever it appeared necessary.”<sup>2</sup> In spite of the pope’s efforts to dissuade him, Michelangelo chose to side with his native city and devoted the next two years of his life to the heroic but doomed republican cause. In the fall of 1528 Michelangelo offered his services to the city “gratis et amorevolmente.”<sup>3</sup> On October 3, he was called to a meeting at San Miniato in order to discuss the advantages and disadvantages of defending that strategic hill on the south side of the Arno.<sup>4</sup> In January of the following year Michelangelo was elected to the *Nove della Milizia*,<sup>5</sup> and on April 6 he was appointed Governor and Procurator General of the city’s fortifications with the generous

1. On the historical background, see C. Roth, *The Last Florentine Republic*, New York, 1968; C. C. Bayley, *War and Society in Renaissance Florence*, Toronto, 1961; J. N. Stephens, *The Fall of the Florentine Republic 1512–1530*, Oxford, 1983; L. von Pastor, *The History of the Popes*, ed. R. Kerr, X, London, 1938, 1–105; P. C. Falletti, *Assedio di Firenze*, 2 vols., Palermo, 1855; E. Alberi, *Relazioni degli ambasciatori veneti al senato*, ser. 2, I, Florence, 1839, and the 16th-century historians of Florence, especially F. Guicciardini, *Storia d’Italia*, 3 vols., ed. F. Catalano, Milan, 1975; B. Varchi, *Storia fiorentina*, ed. G. Milanese, 3 vols., Florence, 1857–1858; B. Segni, *Istorie fiorentine dall’anno MDXXVII al MDLV*, ed. G. Gargani, Florence, 1857, and G. Busini, *Lettere di Giambattista Busini a Benedetto Varchi sopra l’assedio di Firenze*, ed. G. Milanese, Florence, 1860.

2. “. . . rassettare le mura, racconciare le torri, far bastioni, e finalmente fortificare quando e dovunque paresse loro che di bisogno facesse” (Varchi, *Storia*, I, 184).

3. C. de Tolnay, *Michelangelo: The Medici Chapel*, Princeton, 1948, reprinted 1970, 10.

4. *Il carteggio di Michelangelo*, ed. P. Barocchi and R. Ristori, 5 vols., Florence, 1965–1983, III, 262; Busini, *Lettere*, 103; Tolnay, *Medici Chapel*, 10.

5. G. Vasari, *Le vite de’ più eccellenti pittori, scultori ed architetti*, 9 vols., ed. G. Milanese, Florence, 1878–1885, VII, 366.

salary of one gold florin per day. The extant document of his appointment states that, having considered many qualified persons, the Council of Ten of War, the *Dieci di Guerra*, chose Michelangelo because of his “virtù et disciplina,” his unmatched qualities as an artist and architect, his loyalty to Florence, and for services already rendered in the matter of the city’s defense.<sup>6</sup>

Given the precarious situation in which Florence found herself in 1529, Michelangelo’s appointment to this important post bore a considerable burden of responsibility. The independence of Florence was at stake, yet her military preparedness, as often in her previous history, was highly suspect. In appointing Michelangelo to direct the fortification of the city, the Florentine government demonstrated an extraordinary trust in his abilities as a military architect and engineer. Subsequent events proved that the trust was not misplaced, but are we not justified in wondering on what it was founded in 1529? The document of his appointment emphasized Michelangelo’s loyalty and good citizenship, and while it mentioned his ability as an architect (“egli sia eccellente nella architettura”), his practical experience at this date was fairly limited, and he was as yet completely unproven as a military engineer.<sup>7</sup> In the few months between the time he volunteered his services to the city in the fall of 1528 and his appointment as Governor General in April 1529, Michelangelo evidently convinced the city officials that he was the person best qualified to design and construct the fortifications on which the defense of Florence would partly depend.<sup>8</sup>

The principal evidence of Michelangelo’s activity as a military architect prior to his appointment are 20 sheets with designs for fortifications preserved in the Casa Buonarroti. Since they were first published by Charles de Tolnay in 1940, opinions regarding these drawings have varied greatly.<sup>9</sup> Some scholars have dismissed them as fanciful doodles with little practical utility, while others have viewed them as precocious anticipations of later developments in fortification design.<sup>10</sup>

6. “Pertanto, considerata la virtù et disciplina di Michelagnolo di Lodovico Buonarroti vostro cittadino, et sapendo quanto egli sia eccellente nella architettura, oltre alle altre sue singolarissime virtù et arte liberali, in modo che per universale consenso delli huomini non trova hoggi superiori; et appresso, come per amore et affectione verso la patria è pari a qualunque altro buono et amorevole cittadino; ricordandosi della fatica per lui durata et diligentia usata nella sopradetta opera sino a questo dì gratis et amorevolmente. . . .” G. Milanese ed., *Le lettere di Michelangelo Buonarroti, pubblicate coi ricordi ed i contratti artistici*, Florence, 1875, 701.

7. Apparently, however, Michelangelo had a reputation as a military architect from as early as 1516, as is evident from a letter written by Argentina Malaspina Soderini: “è persona che intende di architettura et di artigli[arie].” See *Carteggio*, I, 188. In addition, on 29 September 1527 Michelangelo was appointed “revisor arcium et fortitorum” for the purpose of advising on the fortification of Bologna, but it is uncertain whether he ever fulfilled this obligation. See R. Manetti, *Michelangiolo: le fortificazioni per l’assedio di Firenze*, Florence,

Tolnay described Michelangelo’s inventions as “bold emanations of a sculptor’s fantasy” and likened them to crustaceous creatures, in particular, to cross sections of crabs, complete with claws and antennae.<sup>11</sup> More important, Tolnay assumed that aesthetic rather than practical concerns motivated many of the unconventional forms, and he further supposed that the drawings progressed from geometric to organic conceptions, and from simple to increasingly complex and fanciful designs. This view of the formal development of these drawings has been consistently repeated in the literature and has strongly colored most interpretations of Michelangelo’s intentions as well as most assessments of the practicality of his designs. Thus, although scholars have subsequently pointed out technical and practical aspects of Michelangelo’s fortification drawings, the analogy to crustaceous creatures has remained a commonplace, and many writers still regard them primarily as artistic creations of a fertile and strangely inventive genius.<sup>12</sup>

1980, 38, 108, and R. Tuttle, “Against Fortifications: The Defense of Renaissance Bologna,” *JSAH*, 41 (1982), 197, n. 36.

8. Most notable among other architects/engineers that the *Dieci di Guerra* may have considered for the position was Sebastiano Serlio, who was called from Ferrara in October 1528 to advise on the fortification of Florence. Giovanfrancesco da Sangallo, his cousin Francesco da Sangallo, and other less well-known persons, but engineers with more field experience than Michelangelo, may also have been considered. See Manetti, *Fortificazioni*, 36–43. See also p. 131 of this article.

9. C. de Tolnay, “Michelangelo Studies II: Michelangelo’s Projects for the Fortifications of Florence in 1529,” *Art Bulletin*, 22 (1940), 130–137. The 20 sheets, Casa Buonarroti nos. 11A through 30A, will hereafter be referred to merely by number. The number of drawings accepted as autograph by different scholars varies slightly: L. Dussler, *Die Zeichnungen des Michelangelo. Kritischer Katalog*, Berlin, 1959, nos. 59–77; F. Hartt, *Michelangelo Drawings*, New York, 1970, nos. 325–346; C. de Tolnay, *Corpus dei disegni di Michelangelo*, IV, Novara, 1980, nos. 563–583.

10. For example, Quentin Hughes, in *Military Architecture*, London, 1974, 87, wrote that it is “not known whether the sketches which remain were fanciful scribbles or actual projects for earthworks,” and J. R. Hale concluded that the Casa Buonarroti drawings were probably “fantasies: doodlings prompted by the needs of Florence but following a purely aesthetic impulse towards a more open architectural style.” See J. R. Hale, “The Early Development of the Bastion: An Italian Chronology c. 1450–c. 1534,” in J. R. Hale et al., eds., *Europe in the Late Middle Ages*, Evanston, Ill., 1965, 491–492, reprinted in J. R. Hale, *Renaissance War Studies*, London, 1–29. Vincent Scully viewed the drawings primarily as formal experiments in what he termed the “reflex diagonal.” See V. Scully, “Michelangelo’s Fortification Drawings: A Study in the Reflex Diagonal,” *Perspecta*, 1 (1952), 38–45. Leonardo Benevolo wrote that “here his activity became an arbitrary game, and he exercised himself within the limits of a constant two-dimensional abstraction.” See L. Benevolo, *The Architecture of the Renaissance*, 2 vols., trans. J. Landry, Boulder, Colo., 1978, I, 317. See also P. Marani, *Disegni di fortificazioni da Leonardo a Michelangelo*, Florence, 1984.

11. Tolnay, “Michelangelo Studies,” 136, and his *Corpus*, IV, 74–76.

12. In particular, James Ackerman, *The Architecture of Michelangelo*,

This study seeks to clarify Michelangelo's motivation for making the fortification drawings and attempts to determine their function in the larger context of his role as military engineer for the city of Florence. I will argue that the 20 sheets in the Casa Buonarroti belong to an early stage of Michelangelo's involvement with fortification design and testify to his serious concern with the defense of Florence in 1528–1529. In contrast to the common supposition that Michelangelo's drawings became increasingly more complicated and correspondingly less practical, I will argue that his process of design was exactly the opposite: from fairly abstract and complex initial ideas, Michelangelo proceeded to refine and generally to simplify his conceptions in his search for rational solutions to real military problems. When viewed as a series of interrelated designs, the drawings manifest an internal logic and demonstrate a sustained purpose.

Initially, I will focus on four sheets related to the fortification of the Prato gate which permit us to follow Michelangelo's design process from an initial abstract conception to a rational solution, and from an exploratory preliminary draw-

ing to a carefully drawn final plan. These four drawings illustrate the entirety of this process at its most important moment—at the very beginning of Michelangelo's involvement with fortification design. These are the first drawings that Michelangelo made for the fortifications of Florence, and they clearly reveal not only his creative power but also his practical intent. The method of design manifested in these four sheets, moreover, may serve as a guide for determining the order and purpose of the other 16 sheets with fortification designs in the Casa Buonarroti.

Considered by themselves, many of the fortification drawings appear impractical and entirely too ambitious given the situation confronting Florence in late 1528 and early 1529. Yet they must be viewed not in isolation but as vestiges of a much larger endeavor. The drawings were merely the first step in a long and traditional process of design that led probably first to models and eventually to actual construction. Thus, while this paper will focus initially on the internal evidence of the drawings in the Casa Buonarroti, a proper evaluation of their purpose will lead us to consider their role in a broader historical context.

Casa Buonarroti 27A is a large and complicated sheet, the only extant fortification drawing in which figures are found in conjunction with architectural designs. On the recto is a standing male nude drawn in black chalk (Fig. 1), while on the verso are two figures in black chalk and, at right angles, a hastily drawn jumble of figures in red chalk (Fig. 2). Although the largest figures are michelangelesque in character and appear to have been drawn from the artist's sculpture, they are not of high quality and universally have been considered the work of a pupil. It is likely that these drawings were made by Michelangelo's assistant and housemate, Antonio Mini, as Berenson and most other scholars have supposed.<sup>13</sup> Mini was not a very talented pupil, and the figural drawing on Casa Buonarroti 27A is consistent with his hand and minimal abilities as a draftsman.

In contrast to the figural drawings, the designs for fortifications on the recto and verso generally have been accepted as autograph works by Michelangelo.<sup>14</sup> Doubts regarding the attribution of these drawings have arisen mainly because of the presence, on the same sheet, of the obviously inferior figural drawings. The fortification designs, however, are bold and strongly delineated drawings labeled in Michelangelo's distinctive handwriting and are rightly considered his inventions. This assertion will appear more certain when the drawings are viewed as part of a logical sequence of related designs.

The figures on both the recto and verso of Casa Buonarroti 27A lie underneath the fortification designs and therefore must predate them. Evidently Michelangelo drew on a sheet already

14. Except by Barocchi (*Michelangelo e la sua scuola*, no. 182) and Hartt (*Michelangelo Drawings*, 379).

2 vols., London, 1961, rev. 1964, I, 45–53, and II, 44–49; Frederick Hartt, *Michelangelo Drawings*, 233–237; and Renzo Manetti, *Fortificazioni*, passim, have considered the drawings from a military standpoint and in terms of how they would function if built.

13. B. Berenson, *The Drawings of the Florentine Painters*, 3 vols., Chicago, 1938, reprinted 1970, no. 1660B; Dussler, *Zeichnungen*, no. 74; P. Barocchi, *Michelangelo e la sua scuola. I disegni di Casa Buonarroti e degli Uffizi*, 2 vols., Florence, 1962, no. 182; Tolnay, *Corpus*, no. 567. Mini (1506–1533) lived with Michelangelo as a pupil and household assistant from 1523 to 1531, and therefore throughout the period that the fortifications were designed and built. On Mini, see L. Dorez, "Nouvelles recherches sur Michel-Ange et son entourage," *Bibliothèque de l'École des Chartes*, 77 (1916), 448–470; A. E. Popp, "Garzoni Michelangelos," *Belvedere*, 8 (1925), 6–28; and W. Wallace, "Studies in Michelangelo's Finished Drawings, 1520–1534," unpublished Ph.D. dissertation, Columbia University, 1983, 43–75.

The three largest figural drawings in black chalk (two on the recto and one on the verso) may actually be three views of the same figure, as Tolnay suggested in *Michelangelo: The Tomb of Julius II*, Princeton, 1954, reprinted 1970, 147–148, no. 42A. Johannes Wilde noted that the left figure on the recto is very similar to the black chalk figure on Musée du Louvre no. 686 recto (see Dussler, *Zeichnungen*, nos. 74 and 645), and all these figures appear related to the Bearded Slave (as suggested by Thode, *Michelangelo. Kritische Untersuchungen über seine Werke*, 3 vols., Berlin, 1908–1913, I, 151 and no. 67). There is also a close relationship between the figures on Casa Buonarroti 27A and the *modello* for a Hercules and Cacus in the Casa Buonarroti. See the view illustrated in L. Goldscheider, *Michelangelo: Paintings, Sculptures, Architecture*, London, 1953, reprinted 1963, fig. 206. This latter connection may be of particular significance because Michelangelo was commissioned by the Florentine Signoria to carve a Hercules group for the Piazza della Signoria in 1528, shortly before he became engaged with the city's fortifications. The conjunction, on a single sheet, of drawings from Michelangelo's model for the Hercules (even if drawn by Mini) with studies for fortifications lends support to my thesis that Casa Buonarroti 27A is the first of the fortification drawings (see p. 128 of this article). It is, in a sense, a document of the moment of transition from one commission to another.

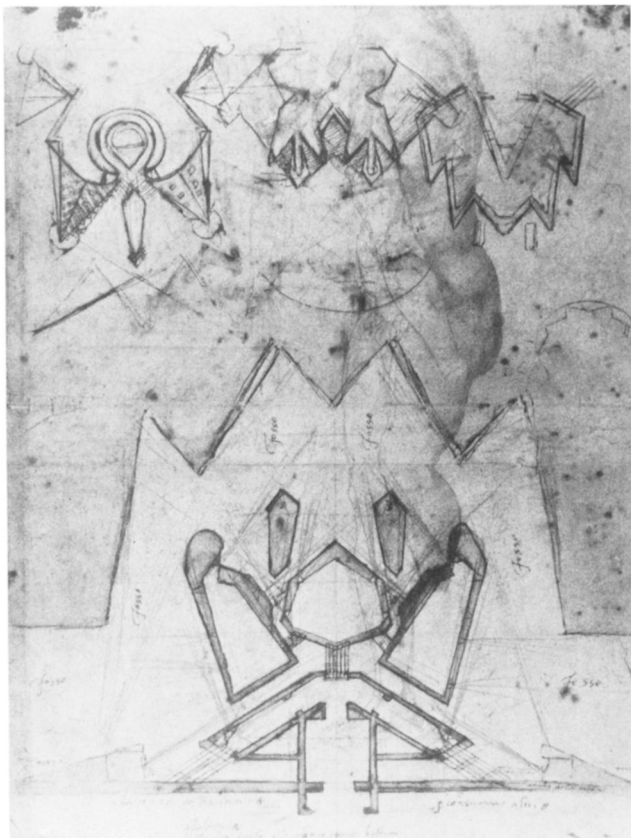


Fig. 1. Michelangelo, Designs for Fortifications, Casa Buonarroti 27A recto (Tolnay, *Corpus*, pl. 567r).

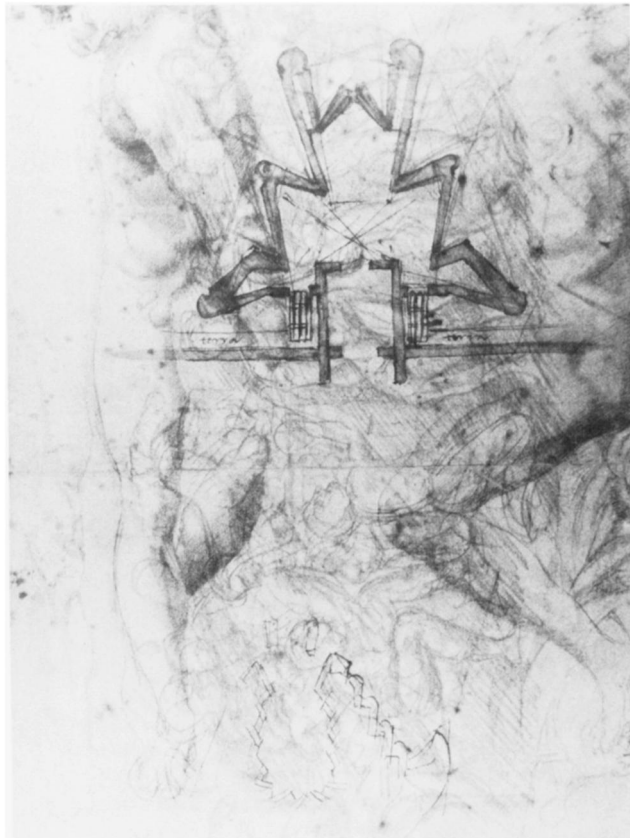


Fig. 2. Michelangelo, Designs for Fortifications, Casa Buonarroti 27A verso (Tolnay, *Corpus*, pl. 567v).

well used by his pupil. Michelangelo frequently drew on the same sheet as Mini and probably did so in this case because it was an unusually large sheet (562 × 408 mm) on hand at the moment. Henceforth he would use only blank sheets. While the final result appears confusing, a closer examination elucidates the logic of the sheet and the probable sequence of these drawings.

Because the figural drawings on the verso of 27A cover nearly the entire sheet, we can assume that Michelangelo began drawing on the comparatively uncrowded recto (see Fig. 1). By the same reasoning it is likely that Michelangelo first drew the large design that fills the entire lower half of the sheet, since this large area was relatively free of earlier sketches. This architectural plan is a design for an extremely complex detached bastion, a triangular-shaped defensive work usually projecting from a rampart or curtain wall, but here situated in front of a rectangular city gate which is drawn toward the bottom center of the sheet.<sup>15</sup> The fortification is actually composed of three separate outworks or lunettes, and

two ravelins, the long narrow constructions placed in front of the defensive work in order to break up a frontal assault. The various parts of the fortification are linked by removable log or plank bridges, and the whole complex is surrounded by a ditch repeatedly labeled "fosso," the outer rim of which, the counterscarp, has a stellate outline echoing the pincerlike (*tenaille*) form of the fortification.

The design of 27A was drawn in pen, ink, and wash over an underdrawing in red chalk. This underdrawing is visible in

15. On the technical aspects and terminology of fortifications, see L. C. Jackson, "Fortification and Siegecraft," *Encyclopedia Britannica*, 11th ed., X, Cambridge, 1910, 679–725; and R. Huber and R. Reith, *Festungen: Der Wehrbau nach Einführung der Feuerwaffen*, Tübingen, 1979. On the development of fortification design, see Q. Hughes, *Military Architecture*, London, 1974; F. L. Taylor, *The Art of War in Italy, 1494–1529*, Cambridge, 1921; Hale, "Early Development," 466–494; and H. de la Croix, *Military Considerations in Town Planning: Fortifications*, New York, 1972. The extensive literature on Renaissance fortification is reviewed by Horst de la Croix in "The Literature on Fortification in Renaissance Italy," *Technology and Culture*, IV, 1963, 30–50.

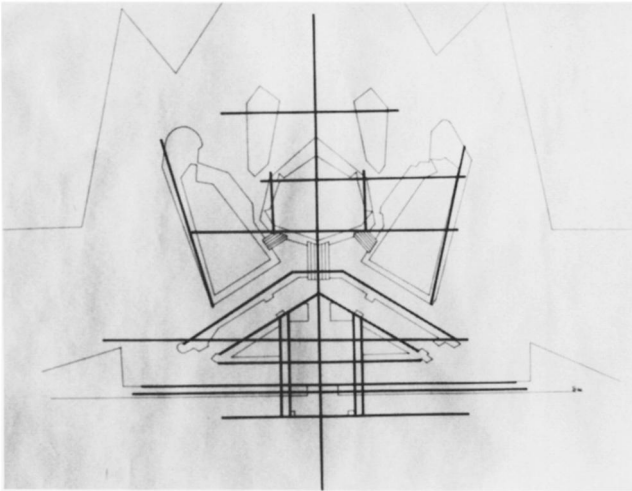


Fig. 3. Diagram of Underdrawing of Casa Buonarroti 27A recto (Courtesy of Donald Sanders)

photographs and is represented in diagrammatic form in Figure 3. Michelangelo began his drawing with the central axis around which he laid out a symmetrical grid of ruled lines. The location of the most important horizontals, which at first appears arbitrary, may have been loosely determined by ratios based on a Fibonacci sequence or on the golden section.<sup>16</sup> Of course, mathematics and geometry were givens of Renaissance design and were repeatedly emphasized in treatises on fortifications; therefore, it would have been natural for Michelangelo, when confronted with an unfamiliar problem, to resort to a time-honored means of architectural design.<sup>17</sup> However, detailed measurements of the drawing fail to reveal a consistent pattern; moreover, it is apparent that as the drawing progressed Michelangelo took increasing liberties with the preliminary grid and with his draftsmanship. For example, the diagonals that establish the angles of the entrance corridors are not regular (i.e.,  $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ ) and are slightly different on the left and right. Toward the end of his drawing, Michelangelo was inventing freely and drawing freehand so that much of the

16. I would like to thank Donald Sanders for the diagrammatic rendering of the underdrawing, and I would like to thank both Mr. Sanders and Mr. Nanda Kirpekar for their interest and helpful discussions concerning Michelangelo's method of design. In reconstructing the underdrawing, it occurred to Mr. Sanders that the placement of the major horizontals was not entirely arbitrary but may have been based on a Fibonacci sequence. Mr. Kirpekar then studied the drawing and concluded that mathematical ratios, possibly based on the golden section, informed many aspects of the design and probably guided Michelangelo's initial steps, at least in laying down the preliminary underdrawing.

17. J. R. Hale, *Renaissance Fortification: Art or Engineering?* (Walter Neurath Memorial Lectures, 8), London, 1977, 17; and H. de la Croix, "Military Architecture and the Radial City Plan in Sixteenth Century Italy," *Art Bulletin*, 42 (1960), 265–290; but see also my caveat, n. 18.

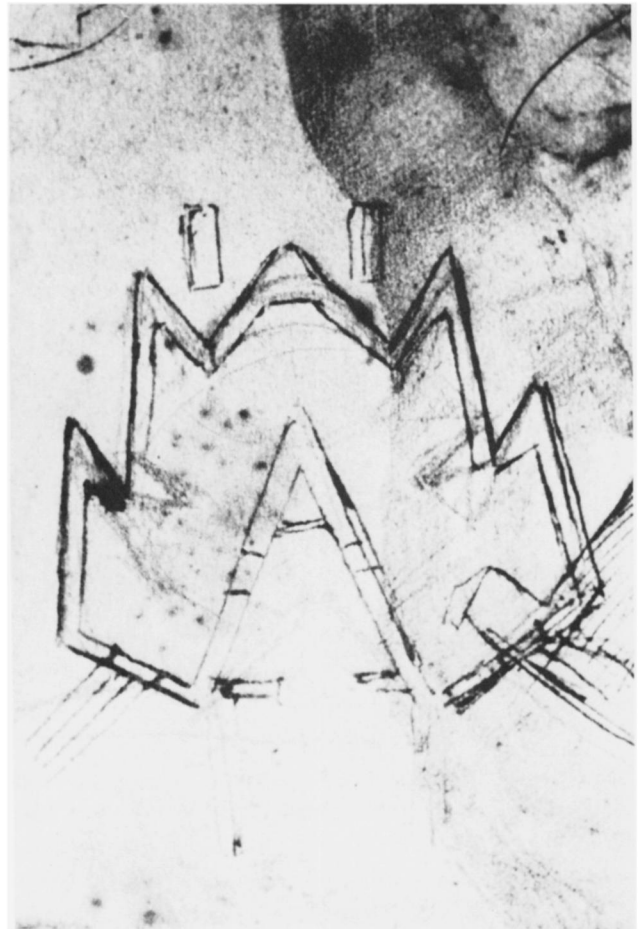


Fig. 4. Detail, Casa Buonarroti 27A recto (Tolnay, *Corpus*, pl. 567r).

final plan corresponds to the underdrawing only in a general way. Nonetheless, the abstract linear scheme with which Michelangelo began this drawing—whether or not it is commensurable—led him to develop a final ground plan which is a complex matrix of thin walls. The design is visually striking but entirely impractical as architecture. Michelangelo evidently realized the inappropriateness of this design procedure, for he never employed it again. Subsequently, the overall plans and most details of his fortifications would be determined by functional and strategic considerations. While Michelangelo conceived other impractical designs for fortifications, he never again generated them from mathematical or proportional schemes.<sup>18</sup>

18. This conclusion contradicts the thesis recently proposed by Caterina Pirina in an article entitled "Michelangelo and the Music and Mathematics of His Time," *Art Bulletin*, 67 (1985), 368–382. Pirina hypothesizes that the background which nourished Michelangelo's innovations in fortification design was the "culture of mathematics" and specifically the artist's indirect contact with the mathematician Niccolò Tartaglia. Pirina suggests that the Casa Buonarroti drawings reflect ideas that Michelangelo may have gleaned from his travels to

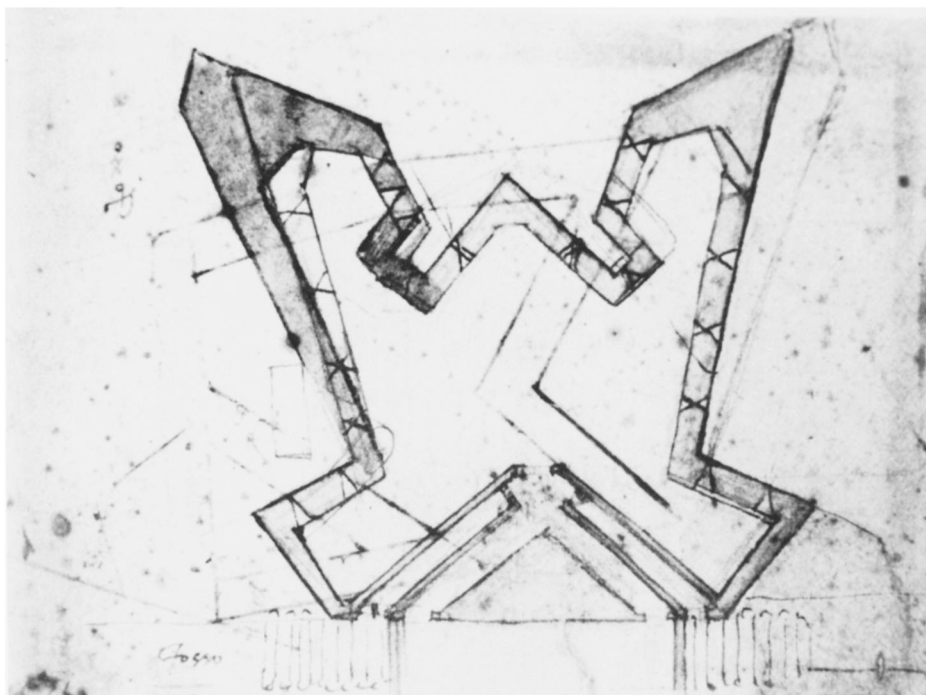


Fig. 5. Michelangelo, Design for a Fortification, Casa Buonarroti 28A recto (Tolnay, *Corpus*, pl. 564r).

The three small designs at the top of 27A recto represent Michelangelo's effort to simplify and consolidate the more complex form of the first drawing. In the course of sketching these three designs (probably from right to left with the sheet turned inversely), Michelangelo dispensed with schematic underdrawings and concentrated instead on the exterior profiles and interior spaces of his designs. In subsequent drawings, Michelangelo increasingly considered function and utility, thinking more in terms of structural mass than linear design. Thus, for example, the drawing on the top right of 27A recto (Fig. 4) still recalls the form of the first drawing on

Pisa, Livorno, and especially Ferrara in June and July 1529 (i.e., possible contact with Tartaglia's ideas, not the man or his writings, which were published later). However, by the time he undertook these missions, the fortifications were already under construction. See Manetti, *Fortificazioni*, 43ff, and p. 131–133 of this article. The problems that concerned Michelangelo and the city government were no longer ones of design but were more practical and pressing, such as the adequacy of the garrisons at Pisa and Livorno and the continued lack of support from Duke Alfonso d'Este of Ferrara. Moreover, following the suggestions of Ackerman, Hartt, and Manetti, I will argue that the fortification drawings were made prior to Michelangelo's appointment as Governor General in April 1529 and therefore well before the trips he undertook in the service of the government. But aside from such particulars of dating, I am skeptical of a thesis that links Michelangelo's innovations, especially with regard to the Florentine fortifications, to developments in mathematics and music. Only one sheet, 27A, shows evidence of having been generated by a scheme based on mathematical ratios, and yet this same sheet, as well as all the other fortification designs, attests to Michelangelo's rejection of such mathematical and proportional design schemes because they led to such obviously impractical results.

this sheet, but it is a greatly simplified plan with a single unified interior space. Unlike the parent conception from which it derived, it is possible to imagine this design in three dimensions.

With the recto completely filled, Michelangelo reversed the sheet and drew another fortification design directly over his pupil's earlier figural drawings (see Fig. 2). The exterior profile, or trace, is not significantly different from the previous drawings, but the interior space has been expanded and the fortification relates more logically to the city gate. In particular, the complicated entrance of Michelangelo's design on the recto has been greatly simplified. To enter the city, one proceeds along the path (labeled "terra") at the base of the wall, then plank bridges cross the ditch to the defensive outwork. The fortification now hides and protects the means of access to the city gate—a strategic problem that preoccupied Michelangelo on several subsequent sheets. Thus, on the recto and verso of this one sheet we already see the process of experimentation, clarification, and refinement that characterizes Michelangelo's design procedure on this and three related sheets.

Casa Buonarroti 28A is the second sheet to be considered (Fig. 5). Ackerman noted the similarity of this drawing to 27A and considered it the most practical of all Michelangelo's designs from a military standpoint, citing in particular the simplified trace, the absence of curves, and the expanded interior space.<sup>19</sup> In this drawing, Michelangelo gave special consider-

19. Ackerman, *Architecture*, II, 48.

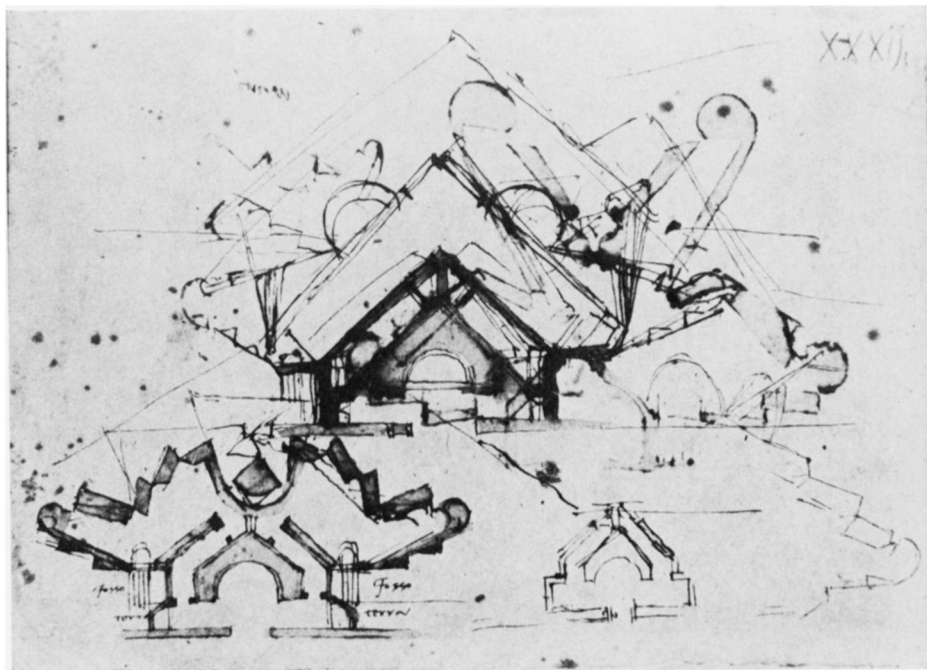


Fig. 6. Michelangelo, Design for Fortifications, Casa Buonarroti 20A recto (*Michelangelo: mostra di disegni, manoscritti e documenti*, Florence, 1964, Tav. LXXVIII).

ation to the disposition of ordnance (note the openings, or embrasures, indicated by X-markings in the wall) and the internal space required for its effective use. Less certainly defined, however, is the relation of the fortification to the city wall and the means by which one enters the gate. Removable bridges at the base of the wall permit one to cross the ditch to a narrow corridor that switches back past a triangular cavalier, a raised gun or observation platform. The long, narrow corri-

dors and thin walls make the entrance structurally complicated and strategically unsound.<sup>20</sup> Michelangelo's dissatisfaction with this aspect of the design is manifest from a series of drawings on another sheet in which this particular problem of access was studied and eventually resolved.

Casa Buonarroti 20A is a working drawing, heavily used on both recto and verso (Figs. 6, 7). Michelangelo began drawing at the center of the sheet where the triangular core (Fig. 8)

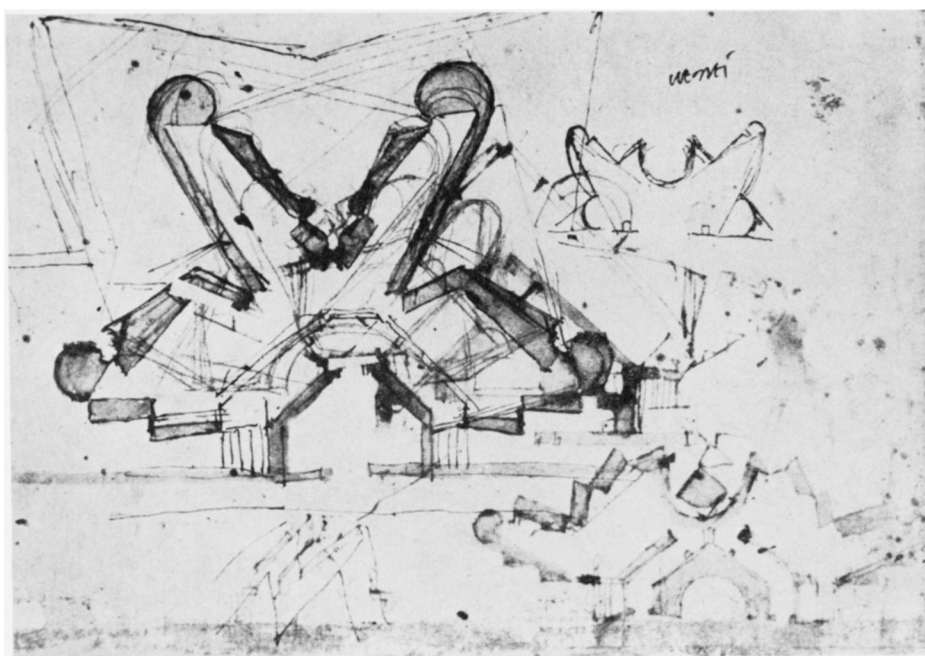


Fig. 7. Michelangelo, Designs for Fortifications, Casa Buonarroti 20A verso (*Michelangelo: mostra di disegni, manoscritti e documenti*, Florence, 1964, Tav. LXXIX).

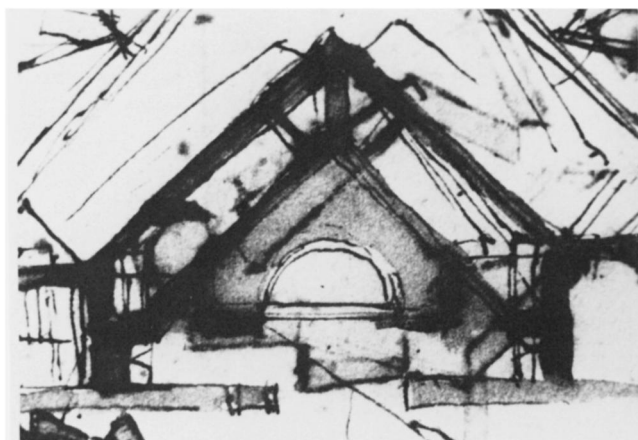


Fig. 8. Detail, Casa Buonarroti 20A recto (Tolnay, *Corpus*, pl. 578r).

relates this design to the same feature on the previous sheet (note especially the wide opening to the fortification known as the gorge, and the similar narrow corridors on either side of the triangular cavalier). From this central core Michelangelo successively enlarged and modified the design by adding pincerlike lateral arms, or salients, and semicircular projections (orillons) designed to protect the flanks of the fortification. The trace can be read in outline (Fig. 9), but successive drawing has rendered it incomprehensible as an interior space. In particular, a series of alternatives in pen and ink and the addition of an ink wash have obscured the functional relationship between city gate and fortification. Therefore, in a quick sketch below and to the right of the first drawing, Michelangelo clarified his intention for the entryway (Fig. 10). Finally, he redrew the entire scheme in the remaining available space in the lower left corner (Fig. 11). Here, the lateral extensions, the clarified means of access, and the relationships between fortification, city gate, and curtain wall are rendered as a fully comprehensible plan. The entryway is clearly related to its "parent" drawing, 28A, but is a much improved solution. Access to the fortification is now simpler, better protected, and more specifically articulated (note such details as the arched portals drawn in elevation and the gate jambs in the passageways). The fortification and city gate are now logically and closely related to one another. Lastly, the series of short wall segments indicates that Michelangelo was considering not only the overall shape of the defensive work but also the specific form of the wall embrasures and possibly a method for their construction.

20. In noting the practical efficiency of 28A both Ackerman (*Architecture*, II, 48) and Manetti (*Fortificazioni*, 111) overlooked the impracticalities of the entrance. In addition to its complexity, there are no embrasures in the flanks (the angle of the fortification closest to and protecting the curtain wall); consequently, there is no fire covering the bridges and entrance corridors, a problem that Michelangelo will consider in subsequent drawings.

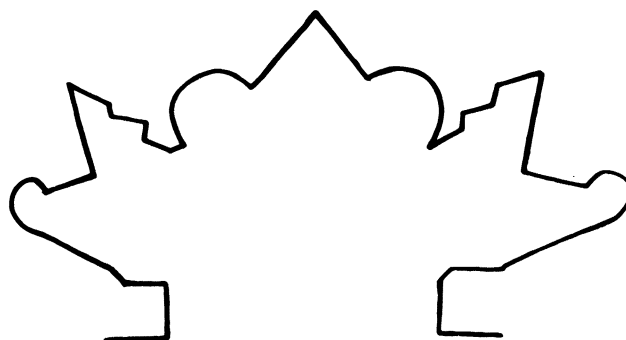


Fig. 9. Diagram of Fortification Trace, Casa Buonarroti 20A recto (William E. Wallace).

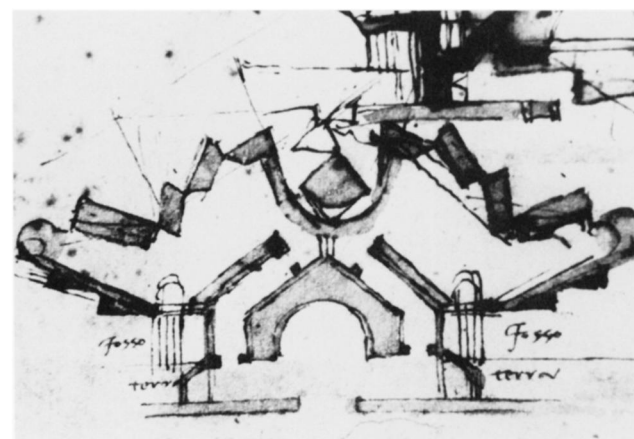
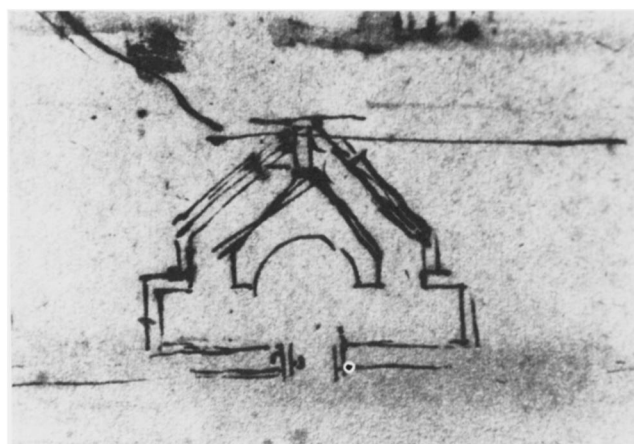


Fig. 11. Detail, Casa Buonarroti 20A recto (Tolnay, *Corpus*, pl. 578r).

Michelangelo then turned over the sheet (see Fig. 7). The heavy drawing on the recto bled through and can easily be read in the lower right corner of the verso. This "palimpsest"

of the recto drawing and the quick pen sketch at the upper right served to transfer the recto design to the verso. These then were the preliminary sketches from which the main drawing on the verso was developed in the empty area to the left. Two pincerlike salients, prefigured in the experiments on the recto, were added to the flat lateral shape of the fortification. More important, the access to the city gate has been further clarified. Although only tentatively indicated, the fortification is now a fully independent entity separated from the wall and city gate it is intended to conceal and protect. It may now properly be termed a ravelin or lunette, detached outworks usually constructed in front of the curtain wall but here positioned like a barbican, a fortified construction defending a city gate. This seemingly insignificant detail has not been noted previously since most discussions of Michelangelo's designs focus on the dramatic interior and exterior shapes of his fortifications. Nonetheless, Michelangelo recognized that the relationship between the outlying fortification and the preexisting medieval city gate was a critical problem that he had to face and resolve. I will return to this point later in this article.

The design on the verso of 20A (see Fig. 7) was the preliminary sketch for the final drawing of this sequence, Casa Buonarroti 14A (Fig. 12). A simple formal comparison reveals the close rapport between these two sheets; it is the relationship of a preparatory sketch to a highly finished and specifically labeled final plan. In the preparatory sketch, the overall outline of the fortification and its relationship to the city wall are roughly sketched out. In the final drawing these features are fully clarified and carefully rendered. The fortification now stands in front and completely independent of the rectangular

city gate and curtain wall. The shapes of the exterior walls and interior spaces are specifically designed, and the pattern of gunfire has been planned for maximum efficacy.<sup>21</sup> The imprecisely drawn embrasures of the preparatory sketch are individually designed on 14A, as is evident from a comparison of the left front salients of these two drawings (Fig. 13).

Casa Buonarroti 14A is nearly two feet wide and was drawn with care and precision. The city gate, the curtain wall with the path at its base, and the detached fortification with a surrounding ditch and counterscarp are all carefully drawn and labeled. Wash was applied to provide easy legibility and to suggest the three-dimensional bulk of the walls. A ruled underdrawing in red chalk was used as a guide to the finished drawing rather than as a separate stage in the design process as in 27A, the first drawing considered.

In addition, 14A is topographically specific. "Porta al Prato" is written within the city gate, a ten *braccia* measure drawn near the gate provides a key to scale, the Mugnong

21. Twenty-three embrasures are indicated on 14A: 17 in the fortification itself, four in the rectangular city gate, and two in the recesses in the curtain wall. The 17 embrasures in the bastion provide an overlapping crossfire; the other six are specifically intended to protect the approaches to the city gate. Ackerman (*Architecture*, II, 47) noted the "blind spots" at the front of the round-headed salients; however, so did Michelangelo. One reason for drawing the lines of fire (in red chalk) was precisely to tackle this problem. A triangular spur was tentatively added to the left salient after the lines of fire indicated the presence of a dead spot. Triangular spurs were also added to the front faces of the lateral salients (note the *pentimenti* of the walls as they were initially drawn) in order to correct a problem in the pattern of the crossfire.

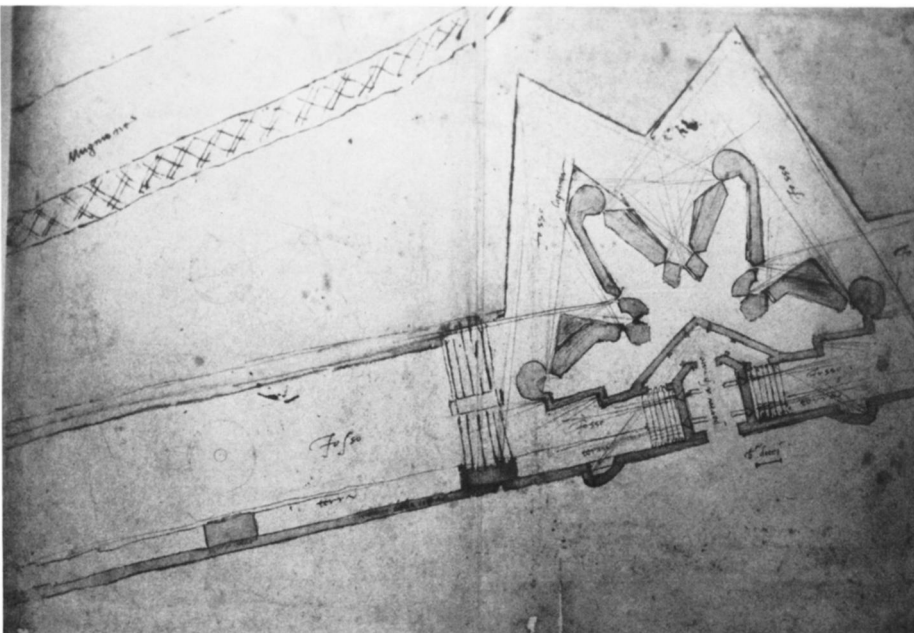


Fig. 12. Michelangelo, Designs for a Fortification at Porta al Prato, Casa Buonarroti 14A recto (Tolnay, *Corpus*, pl. 577r).

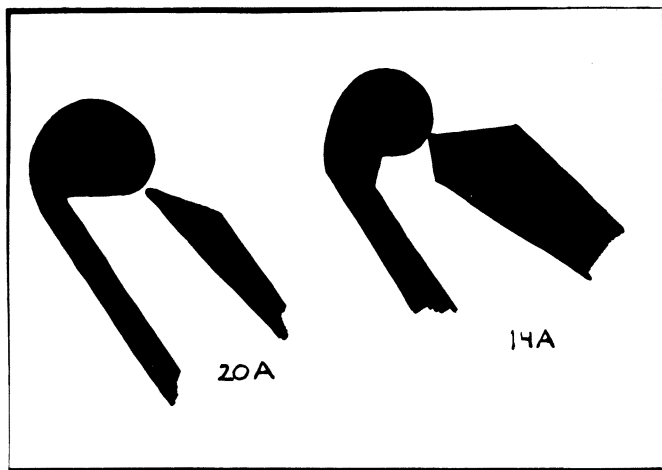


Fig. 13. Diagram of Left Front Salients of Casa Buonarroti 20A and 14A (William E. Wallace).

stream just outside the Prato gate has been indicated in the upper left, and the plan is oriented to the compass and therefore tilted on the sheet.<sup>22</sup> The dimensions of the gate roughly correspond to the still extant medieval tower which stands, without its flanking walls, isolated in the traffic on the modern road to Prato. Altogether, 14A is a large and impressive project design for a specific site, drawn in the finished manner of a final plan.

Casa Buonarroti 14A is the final design of the related series of drawings that began with Casa Buonarroti 27A. This latter drawing was not only the beginning of this particular series but was probably the first of all the fortification drawings. Its anomalies suggest that it was made in the earliest moments of Michelangelo's engagement with the problem of fortification design: it is the only sheet in which figural drawings are found in conjunction with architectural designs, and it is the only drawing in which a schematic method of design was employed to generate an architectural construction. The resulting plan was complicated, impractical, and unresolved in such details as the deployment of ordnance, the use and communication between internal spaces, and the functional relationship between the preexisting medieval defenses and the modern protective outwork. However, the sequence of design manifested on the recto and verso of 27A adumbrated the rational approach which informed the rest of the drawings in this series, culminating in the well-resolved final plan, Casa Buonarroti 14A.

The design sequence proposed here departs from the general

22. My thanks to Douglas Lewis for suggesting to me that the fortification was drawn on an angle in accordance with the compass and perhaps with respect to a map or master plan. Dr. Lewis also suggested that the faintly drawn circles in red chalk on the left side of the sheet might also be related to Michelangelo's consideration of compass orientation and topography.

view that the fortification drawings developed from the simple to the complex, with the drawings becoming increasingly abstract and fanciful. Because of its complexity, Casa Buonarroti 27A is most often considered one of the last drawings of the series, never the first. Instead, I believe the drawings manifest Michelangelo's search for rational solutions to military problems and progress from abstract linear designs to clearly articulated spatial conceptions: "dal disegno allo spazio." Of course, it does not necessarily follow that a rational process of design will lead to rational constructions, but this is a different problem that will be considered later in this article.

The designs for the Porta al Prato may serve as a reliable guide for determining the order and intent of the other fortification drawings in the Casa Buonarroti, drawings that are, for the most part, products of a similarly rational design procedure. For example, the five sheets related to a fortification at Prato d'Ognissanti (Figs. 14 through 19) follow the design sequence I have outlined here. These sheets contain drawings for a projecting gun platform or bastion to be built just south of the Prato gate at the corner of the city wall nearest the Arno river. Michelangelo began with bold and imaginative stellate forms (Figs. 14, 15), from which he developed a design (Fig.

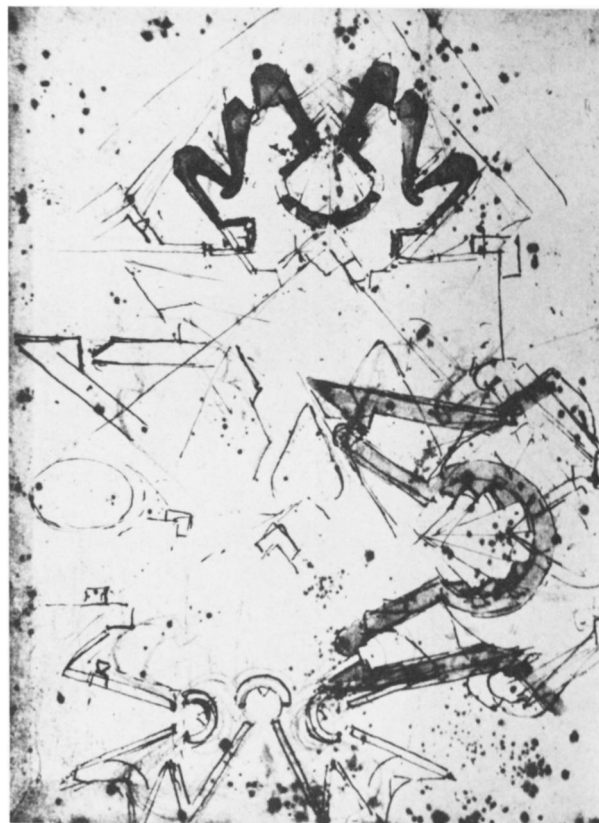


Fig. 14. Michelangelo, Designs for a Bastion, Casa Buonarroti 30A recto (Barocchi, *Michelangelo e la sua cerchia*, pl. CLXXVI).

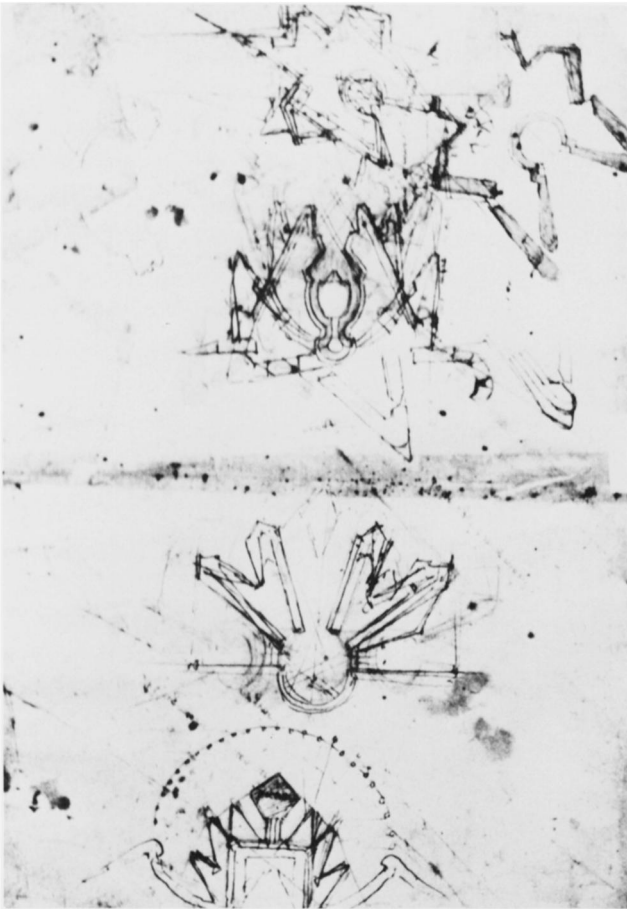


Fig. 15. Michelangelo, Designs for a Bastion, Casa Buonarroti 13A verso (Barocchi, pl. CLXXV).

16) based on these rapid and somewhat abstract preliminary sketches. Apparently Michelangelo recognized the unreasonable complexity of this plan, for he experimented with an alternative design for the same site (Fig. 17), which he ultimately carried to a higher state of realization. Michelangelo honed and refined this second design in a series of closely related sketches on a single large sheet (Fig. 18), prior to neatly redrawing the design as a labeled and topographically specific final plan that is readily conceivable as a three-dimensional construction (Fig. 19).<sup>23</sup> This alternative scheme is simpler, more compact, internally more spacious, and better related to the still extant medieval tower, the Torre dei Serpe, which guarded the corner of the city walls at the Prato d'Ognissanti.

The designs for the fortifications at the Porta al Prato and the Prato d'Ognissanti both began with fairly abstract conceptions and proceeded in a logical fashion to neatly labeled plans for specific sites drawn on large sheets of paper. Any one design analyzed in isolation reveals the process of continuous

23. The plan of 15A provides clear evidence that Michelangelo was considering the elevation of the structure. "Di sotto" is written on the two orillons projecting from the curving bastion wall, indicating that these were platforms at a lower level than the main bastion. Similarly, the words "pianta disotto" (plan of the lower level) written along the front face also assists in imagining this as a three-dimensional construction. Perhaps consideration of the materials that were actually used in building the fortifications—packed earth, unfired bricks, tow, and straw—led Michelangelo to favor the more practical rounded forms of Figure 19 as opposed to the sharply angular tenaille traces that characterize stone construction and Michelangelo's first designs (Figs. 14, 15, 16).

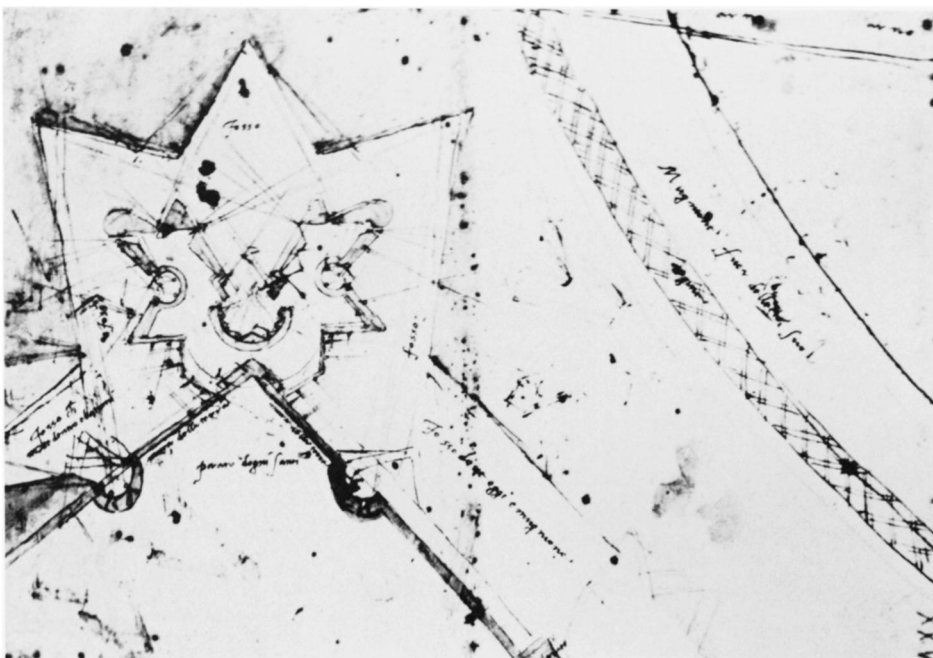


Fig. 16. Michelangelo, Designs for a Bastion at Prato d'Ognissanti, Casa Buonarroti 13A recto (Barocchi, pl. CLXXIV).

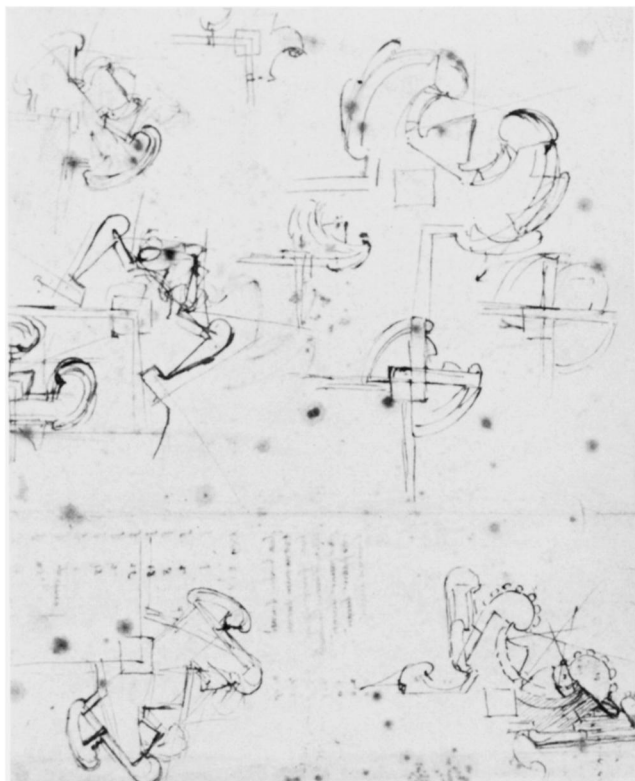


Fig. 17. Michelangelo, Designs for a Bastion at Prato d'Ognissanti, Casa Buonarroti 17A recto (Tolnay, *Corpus*, pl. 579r).

elaboration which characterizes much of Michelangelo's draftsmanship; however, an examination of the sequence of drawings on several sheets reveals an extended process of design with a different motivation and a larger overall purpose. The designs were developed in alternating stages of elaboration and clarification, of experiment and gradual refinement. Except for the earliest plan, 27A, which was mainly determined by its abstract preliminary scheme, Michelangelo followed this fairly common procedure in developing most of his fortification designs. As with the nearly contemporaneous drawings for the Medici Chapel and Laurentian Library, Michelangelo rapidly sketched an initial idea, frequently in a variety of alternative designs. One or more of these was developed, sometimes to the point of confusion. An essential idea was then extracted and further refined in a series of related drawings on the same and on different sheets. These in turn served as the basis for a more finished design or presentation drawing.<sup>24</sup> In the case of the fortifications, all stages of drawing—from preliminary sketch to final plan—were carried out by Michelangelo himself, possibly because of the newness of the problem and the uniqueness of his solutions, but also because of his intense interest in the project and his desire to gain the commission to direct work on the Florentine fortifications. The two series of fortification drawings examined here reveal the artist not only as a conceptual designer but also as a practi-

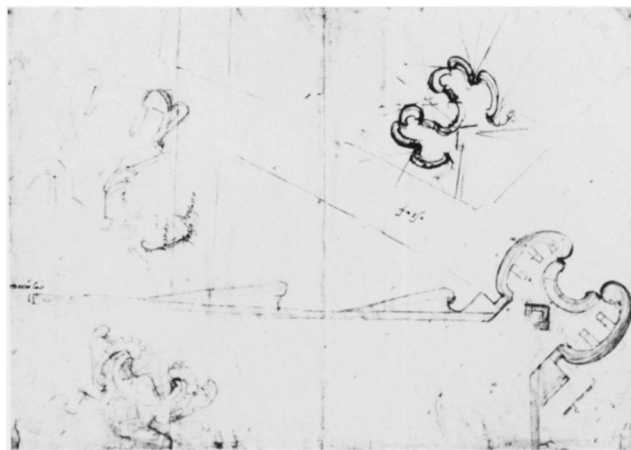


Fig. 18. Michelangelo, Design for a Bastion at the Prato d'Ognissanti, Casa Buonarroti 16A recto (Barocchi, pl. CLXX).

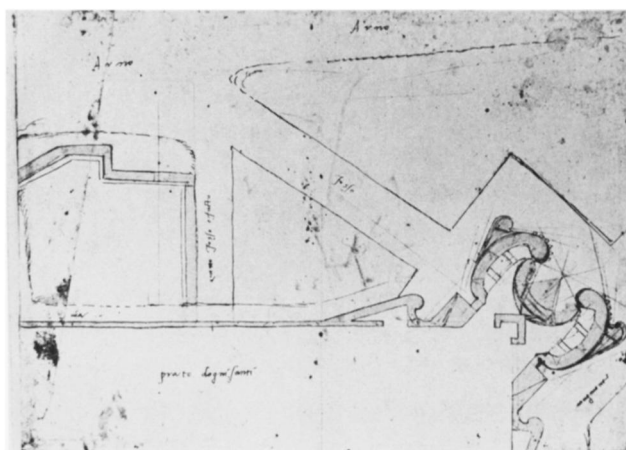


Fig. 19. Michelangelo, Design for a Bastion at Prato d'Ognissanti, Casa Buonarroti 15A recto (Tolnay, *Corpus*, pl. 581r).

cal architect seeking solutions to particular problems of defense. This conclusion, based on an analysis of the internal evidence of the drawings, is buttressed by a consideration of their broader historical context.

More than half of the extant fortification drawings are designs for bastions or detached outworks (lunettes and ravelins) to protect city gates.<sup>25</sup> It is reasonable that Michelangelo di-

24. Finished presentation drawings were sometimes made by assistants as may have been the case with the Porta Pia (E. B. MacDougall, "Michelangelo and the Porta Pia," *JSAH*, 19 [1960], 97–108) and more certainly in the case of the presentation drawing made by Tiberio Calcagni for San Giovanni dei Fiorentini (Vasari, ed. Milanesi, VII, 262; A. Nava, "Sui disegni architettonici per S. Giovanni dei Fiorentini in Roma," *Critica d'arte*, 1 [1935], 102–108). In a forthcoming study, I argue that in special circumstances, and particularly for architectural projects, Michelangelo sometimes entrusted assistants with the task of drawing up a finished presentation drawing to satisfy the demands of a patron or commission.

25. There were 11 gates in the medieval circuit of walls, and Benedetto Varchi informs us that Michelangelo protected each one with a bastion (Varchi, *Storia*, Bk. X, Chap. 41).

rected his attention to this problem because gates are weak points in any defensive system and were especially vulnerable to the destructive power of contemporary artillery.<sup>26</sup> At the same time, Michelangelo recognized that the gates still had to function as such, to bring food and supplies into the besieged city and to permit sorties by the defenders. It is evident from the series of drawings for the Porta al Prato that Michelangelo devoted considerable attention to the problem of entrance and egress. During the siege, there were few full-fledged assaults on the walls. Most engagements between the belligerents were skirmishes fought by small detachments of soldiers outside the city.<sup>27</sup> The extant drawings indicate that Michelangelo accurately anticipated the small and rapid military engagements that characterized much of the fighting during the siege. He designed the fortifications so that soldiers could sortie and reenter the city swiftly and under protection.

Most of the defensive works that Michelangelo designed were protective outworks for soldiers with small firearms rather than emplacements for large artillery, which was in extremely short supply.<sup>28</sup> The complexity, constricted interior spaces, and numerous embrasures of Casa Buonarroti 14A (see Fig. 12) do not seem so illogical when we realize that the fortification was designed for infantry with small arms rather than for larger ordnance. Indeed, Simon Pepper has pointed out that such firepower-intensive defenses were a normal part of Renaissance fortifications, although few survive because they were frequently constructed in the ditches in front of the ramparts, which was exactly the case with many of Michelangelo's gate defenses.<sup>29</sup>

In contrast, the bastion at Prato d'Ognissanti (see Fig. 19) was designed not to protect a gate but as a gun emplacement guarding the Arno River, the mouth of the Mugnone stream, and southern approaches to the Prato gate. In order to accommodate the larger guns which would be situated here, Michel-

angelo designed a simpler bastion with fewer embrasures and more internal space. The four lightly sketched rectangles on the inside of the bastion represent platforms for four artillery pieces, a not unreasonable number considering the strategic importance of this particular defensive work.

It is logical that Michelangelo devoted considerable attention to the defense of the Prato gate and the nearby Prato d'Ognissanti because the road to Prato was one of the most important supply and communication arteries of Florence. Indeed, the drawings related to these contiguous sites along the northwest wall of the city compose nearly half of all the extant fortification drawings and include all five drawings on large or "royal" size paper (c. 410 × 560 mm). Already by mid-1528 it was evident that the troops of the Pope and Emperor would approach the city from the south, thereby making the Prato road, on the north side of the Arno, the most vital lifeline of the beleaguered city, which in fact it remained throughout the siege. Thus, the strategic significance of the two fortifications discussed here partly accounts for their size and complexity, as well as the effort Michelangelo devoted to designing them.

Most drawings represent a fairly early stage in the fulfillment of a commission. The evidence suggests that this was the case with Michelangelo's fortification drawings. On the verso of Casa Buonarroti 14A is a *ricordo* dated 25 July 1528<sup>30</sup> that provides a *terminus ante quem* for this sheet and by implication for the related drawings of this series. A *ricordo* of September 1528 on another drawing provides additional evidence that these designs were drawn in the summer and fall of 1528, soon after the institution of the *Nove della Milizia* and shortly after Michelangelo volunteered his services to Florence.<sup>31</sup> At this time, Michelangelo was merely one of a number of architects and engineers who were consulted about fortifying the city. For example, on 12 October the Balia wrote to Alfonso d'Este of Ferrara requesting that Sebastiano Serlio be sent to advise on the fortifications, and he arrived in Florence about a month later.<sup>32</sup> Similarly, the Balia wrote to the Duke of Urbino on 4 January 1529 requesting the services of the engineer Pierfrancesco da Urbino.<sup>33</sup> Michelangelo did not receive his appointment to direct the fortification of the city until April of the following year. It is reasonable to suppose that he drew the fortification designs during this interim period, when the city government was actively soliciting persons and proposals to

26. Ackerman, *Architecture*, I, 45–46, and J. R. Partington, *A History of Greek Fire and Gunpowder*, Cambridge, 1960, on changes introduced in warfare because of changes in technology.

27. Roth, *Last Republic*, Chapters 10 and 11, 225–283, especially 248–249, 259–260, and the contemporary historians cited in n. 1.

28. In a stimulating article, Simon Pepper reminds us of the extremely small number of artillery pieces that constituted the arsenals of most Renaissance states. He emphasized that infantry and small guns were much more important than large cannon in most Renaissance warfare and suggested that fortifications were built primarily to accommodate these smaller weapons. See S. Pepper, "Firepower and the Design of Renaissance Fortifications," *Fort*, 10 (1982), 93–104; see also J. Hook, "Fortifications and the End of the Siense State," *History*, 62 (1977), 380, n. 53. Large artillery pieces were still rare enough that certain ones, such as the great culverin that figured in the siege of Florence, the so-called "archibuso di Malatesta" cast by Biringucci da Siena, were given names and are recorded in the annals of the historians (Varchi, *Storia*, II, 147).

29. Pepper, "Firepower," 95.

30. *I ricordi di Michelangelo*, ed. L. B. Ciulich and P. Barocchi, Florence, 1970, 241.

31. As proposed by Ackerman (*Architecture*, II, 49), Hartt, (*Michelangelo Drawings*, 233), and Manetti (*Fortificazioni*, 40). The *ricordo* of September 1528, is found on Casa Buonarroti 17A verso (illus., Tolnay, *Corpus*, no. 579v).

32. G. Gaye ed., *Carteggio inedito d'artisti dei secoli XIV–XVI*, 3 vols., 1839–1840, II, 168, 170–171; Manetti, *Fortificazioni*, 38–39.

33. Gaye, *Carteggio*, 177, and n. 8 above.

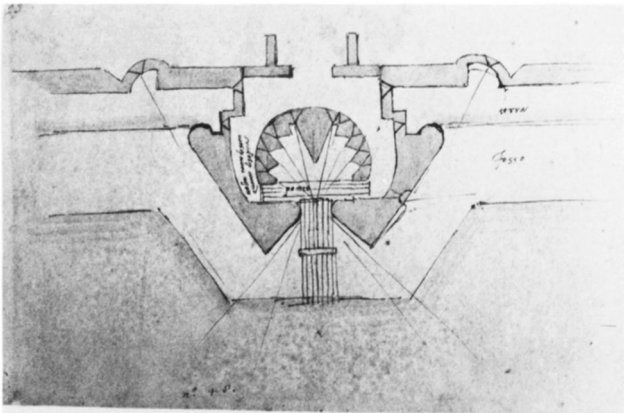


Fig. 20. Michelangelo, Design for a Fortification, Casa Buonarroti 23A recto (Tolnay, *Corpus*, pl. 569r).

assist in its defense. We recall that the document of his appointment duly noted “the labor he has undertaken and the diligence he has displayed in the above mentioned work [‘munitione et fortificazione’] up to the present time.”<sup>34</sup>

Many of the extant sheets preserved in the Casa Buonarroti are no more than experiments in design, like 27A (see Fig. 1), drawings that may be considered preparatory to more practical solutions. However, some more finished drawings, such as 14A, 15A (see Figs. 12, 19), or 23A (Fig. 20), are carefully rendered and labeled designs for specific sites that appear to have been made as final plans or in preparation for even more finished drawings, cartoons, or models that could be presented to members of the *Nove della Milizia* and *Dieci di Guerra*.

Benedetto Varchi, in his account of the siege of Florence, records that some people “blamed Michelangelo for having made the bastions with too many flanks and embrasures thereby weakening them; moreover, the bastions had such sharply tapered and narrow angles that it was very difficult to deploy the large artillery pieces. . . .”<sup>35</sup> Varchi’s report supports the possibility that some of Michelangelo’s designs, whether in the form of drawings or models, were actually presented to city officials to be discussed and evaluated. The criticism could pertain to a number of the drawings in the

34. “. . . ricordandosi della fatica per lui durata et diligentia usata nella sopradetta opera sino a questo di gratis et amorevolmente” (Milanesi, *Lettere*, 701).

35. “Fu biasimato da alcuni Michelangelo d’averli fatti con troppi fianchi e colle cannoniere troppo spesse, quasi venissero in tal maniera a indebolirsi, e ancora troppo stretti, ovvero sottili, dicendo, che l’artiglierie grosse facevano molto maggior passato che non era la larghezza, ovvero la grossezza loro” (Varchi, *Storia*, II, 147; see a similar criticism in the anonymous *Breve istorietta dell’assedio di Firenze*, cited in A. Gotti, *Vita di Michelangelo Buonarroti*, 2 vols., Florence, 1875, I, 182–183).

Casa Buonarroti.<sup>36</sup> Even the more finished and seemingly rational designs could have been justly considered impractical, especially in light of the limited time and resources at Florence’s disposal in late 1528 or early 1529.<sup>37</sup> They were, however, a natural preliminary step in Michelangelo’s effort to demonstrate to the government that he was qualified, and indeed eager, to direct the fortification of the city. They are best understood as vestiges of the earliest stage of an effort to articulate some innovative ideas and to gain a commission. This may partly explain why there are only 20 sheets, mostly related to a few sites, while there are no drawings for some others. In particular, scholars have remarked on the absence of designs obviously related to the fortification of San Miniato; however, the question—as much political as military—of whether or not to fortify this hill was still being hotly debated when Michelangelo was making his drawings in 1528.<sup>38</sup> Since Michelangelo’s designs were intended primarily to demonstrate his ideas and interest, it is reasonable that he concentrated on an obvious problem (the defense of the gates) and on just a few sites that would certainly require new defenses. Ultimately the drawings, and models made from them, probably were never more than visual props to verbal explanations. Like most Renaissance presentation drawings, they were promises rather than final plans used in actual construction.

In a painting by Matteo Rosselli in the Casa Buonarroti (Fig. 21), Michelangelo is shown explaining, with the aid of a three-dimensional model, his plans for the defense of San Miniato.<sup>39</sup> The posthumous painting celebrates the memory of a great man; it is truthful in a rhetorical rather than a documentary way. It does remind us, however, that models were a traditional means of demonstrating one’s intentions to patrons and of carrying out a commission.<sup>40</sup> On the actual building

36. It is likely that the criticism reported by Varchi was based on such discussions rather than on the fortifications actually built, since the latter were constructed very rapidly in temporary materials and were necessarily much simpler than Michelangelo’s drawn designs (see n. 46). Moreover, Michelangelo’s fortifications proved effective throughout the siege and therefore would not have provided just grounds for the critic. The criticism is also less relevant when we realize that many of the fortifications were designed for infantry rather than for artillery.

37. Consideration of Florence’s limited finances may also partly underlie the criticism of Michelangelo’s designs. On the enormous financial burden imposed by the construction of fortifications, see Hook, “Fortifications,” 372–387, and J. R. Hale, “Terra Ferma Fortifications in the Cinquecento,” *Florence and Venice: Comparisons and Relations. II: Cinquecento*, ed. S. Bertelli, N. Rubinstein, C. H. Smyth, Florence, 1980, 169–187.

38. Ackerman, *Architecture*, II, 45; Manetti, *Fortificazioni*, 37–49.

39. A. W. Vliegenthart, *La galleria Buonarroti: Michelangelo e Michelangelo il Giovane*, trans. G. Faggini, Florence, 1976, 116–118.

40. J. S. Ackerman, “Architectural Practice in the Italian Renaissance,” *JSAH*, 13 (1954), 3–11; M. Hollingsworth, “The Architect in Fifteenth-Century Florence,” *Art History*, 7 (1984), 385–410; see also,



Fig. 21. Matteo Rosselli, "Michelangelo Directs Work on the Florentine Fortifications," Casa Buonarroti, Florence (Vliegenthart, *Galleria Buonarroti*, pl. 13).

site, models and direct supervision took the place of the experimental designs and neatly drawn presentation plans that have come down to us. The evidence from the field is lost, and the Casa Buonarroti drawings survive precisely because of the different functions they served in the realization of this mammoth task.

When Michelangelo was appointed to direct the fortifications in April 1529, barely six months remained before Florence was invested in October 1529. There was no longer need, nor time, for elaborately conceived fortification designs. The

for example, L. Shelby, "The Role of the Master Mason in Mediaeval English Building," *Speculum*, 39 (1964), 384–403, esp. 391–392 on the use of models rather than drawings to convey information to builders on the site.

design stage was superseded by the pressing need to recruit, organize, and direct the massive labor force required to actually construct the fortifications. Just a few days after Michelangelo's appointment, his *capomaestro* and right hand man, Stefano di Tommaso, was paid ten florins to supervise construction in the field.<sup>41</sup> On 31 May Niccolò Dati wrote that the *muratore* Fabiano Neretti and his six companions, all master masons, were ready to assist Michelangelo.<sup>42</sup> On this same day, and again on 3 June, the government authorized payments for construction of the fortifications.<sup>43</sup> By the summer, there were 315 laborers working at San Miniato,<sup>44</sup> and altogether approximately 3,000 persons were employed in building the defensive works for the city.<sup>45</sup> In addition to trips made to Pisa, Livorno, Ferrara, and possibly Arezzo to inspect the fortifications of those cities, Michelangelo coordinated and directed this enormous enterprise, probably the largest construction project in Florence since the erection of the medieval circuit of walls. Given that the fortifications were built in haste and of temporary materials, they were necessarily simpler than the designs envisioned by Michelangelo at least six months previously.<sup>46</sup>

41. ". . . per suo servizio di duo mesi per disegnatore sopra a bastionj chominciatj addì 13 daprile" which may have included the translation of drawings into models (Manetti, *Fortificazioni*, 45, 113).

42. *Carteggio*, III, 271.

43. Roth, *Last Republic*, 140, 187.

44. *Ricordi*, 252–253. In a letter dated 18 July 1529, Marcantonio Cartolaio, Chancellor of the *Nove della Milizia*, wrote that more than 200 workers labored "day and night" on the fortification of San Miniato (Falletti, *Assedio*, I, 196; see also, Manetti, *Fortificazioni*, 45–47, 58–61). On 20 September 1529, the Signoria decreed that every male between 18 and 50 years of age was required "per lavorare e condurre l'opera da bastioni a fortificatione della cipta [città]" (Archivio di Stato, Florence: Signori e Collegi, *Deliberazioni Duplicati* 44, fol. 463v).

45. B. Zevi, "Le fortificazioni fiorentine," *Michelangelo Architetto*, ed. P. Portoghesi and B. Zevi, Turin, 1964, 389; Manetti, *Fortificazioni*, 46–47. On the organization of work and the impressment of labor for the building of fortifications, see J. R. Hale, "The End of Florentine Liberty: The Fortezza da Basso," *Florentine Studies: Politics and Society in Renaissance Florence*, ed. N. Rubinstein, London, 1968, 501–532, esp. 514–517 (reprinted in Hale, *Renaissance War Studies*, 31–62); Hook, "Fortifications," 383–384, and R. Goldthwaite, *The Building of Renaissance Florence*, Baltimore and London, 1980, 122–123.

46. Old views such as Giorgio Vasari's well-known fresco of the siege in the Palazzo della Signoria and Stefano Bonsignori's map of Florence in 1584 offer some idea of the relative simplicity of the constructions actually built in the short period prior to the beginning of the siege (see G. Boffito and A. Mori, *Piante e vedute di Firenze*, Florence, 1926, facing p. XXIV; also view of Matteo Florini, 1600, facing pl. III, n. 4, and *passim*). The bastion built at Prato d'Ognissanti ("baluardo della serpe") still figured prominently in views and maps throughout the 17th and 18th centuries.

47. R. and M. Wittkower, *The Divine Michelangelo: The Florentine Academy's Homage on His Death in 1564*, London, 1964, pp. 93–95, 150.

48. Vasari, ed. Milanese, VII, 217.

Michelangelo's decision to remain in Florence and to devote himself to the defense of his native city during the greatest hardships of the siege are important indications of his loyalty as a Florentine citizen and the strength of his republican convictions. The much-discussed flight to Venice in September 1529 had more to do with Michelangelo's sometimes timorous personality than with his politics and should not overshadow the fact that he returned shortly after Florence was invested to supervise the defense of the city for the duration of the siege. The fortifications he designed and built proved effective in successfully resisting a vastly superior army. Ultimately it was famine, exhaustion, and treachery, not a weakness of the fortifications, that brought about the capitulation of Florence on 12

August 1530, after a debilitating ten-month siege.

In the Renaissance, military engineering was an important aspect of the profession of being an artist. For his funeral celebration, Michelangelo's catafalque was decorated with eight scenes illustrating a lifetime of extraordinary accomplishments. Significantly, one of these represented the construction of the Florentine fortifications.<sup>47</sup> According to Vasari, Michelangelo said that he knew little of painting and sculpture but considered himself an expert on fortifications.<sup>48</sup> Unlike most Renaissance artists and theorists, he had the opportunity not only to design fortifications but to build them, and further, to prove their efficacy in time of war.