

## *Introduction.*

# *The Drawings of Antonio da Sangallo the Younger: History, Evolution, Method, Function*

### *State of Research*

Even before the first drawings entered the collection of the Grand Dukes of Tuscany in 1574, they may have been accessible through Antonio da Sangallo the Younger's heirs to the few interested in them. Some of the most beautiful were already acquired at that time by early collectors such as Giorgio Vasari.<sup>1</sup> Yet not until Percier referred to Antonio's plan U 314A for his reconstruction of the Villa Madama, around 1790, is their influence traceable.<sup>2</sup> Percier's student Paul Letarouilly (1795–1855) was in Rome between 1820 and 1824 and at that time began preparations for his *Edifices de Rome moderne*, which is linked in so many respects with Percier and Fontaine's *Palais, maisons et autres édifices modernes dessinés à Rome*.<sup>3</sup> Letarouilly must have been informed by Percier of the unexplored treasures in the Uffizi and probably used them from the beginning for his reconstructions of the early projects for St. Peter's or of the Palazzo Farnese.<sup>4</sup> Already in 1775 another early historian of Renaissance architecture, Seroux d'Agincourt, had acquired a volume with architectural drawings from Mariette's papers. It may still have been identical with one of the many volumes of Vasari's *Libro* and included among others Fra Giocondo's U 6A for St. Peter's and a series of studies after antique capitals and cornices that had been attributed wrongly to Antonio da Sangallo the Younger probably already by Vasari.<sup>5</sup>

Seroux sold the volume in 1798 to the Grand Duke of Tuscany and published one of the so-called Sangallo drawings and U 6A, whose attribution to Fra Giocondo was based solely on Antonio's inscription on the verso, in his *Histoire de l'art* of 1811 forward.<sup>6</sup>

That Seroux's volume included also drawings by Antonio himself is confirmed by other sources from these years.

Strangely enough, G. Gaye was totally unaware of the existence of Antonio the Younger's drawings in the Uffizi when, in 1840, he published a letter of 1574, in which Antonio di Orazio da Sangallo offered twenty-one volumes of his grandfather's drawings of fortifications to the grand duke.<sup>7</sup> The letter aroused general interest, and Carlo Pini and the Milanese brothers, who were experienced archivists, began to work on the drawings soon after their rediscovery.<sup>8</sup> The first systematic description of Antonio's drawings followed in 1854, in the appendix to the Antonio da Sangallo *vita* in the eleventh volume of Le Monnier's edition of Vasari.<sup>9</sup> In this descriptive catalogue, which Gaetano Milanese printed unchanged in the commentary to his Sangallo *vita* of 1880 (and thus probably regarded as his intellectual property), hundreds of Antonio the Younger's drawings were arranged and described typologically and topographically, and many of Antonio's inscriptions were transcribed. The sheets were at that time still in old albums that were much less systematically arranged but followed typological criteria. Volumes I and V contained most of the drawings for St. Peter's; Volume II, studies for churches and chapels; Volume III, studies for doors, fireplaces, capitals, and other details; Volume IV, secular buildings; Volume V, sacred buildings; Volume VI, studies from Antiquity; Volume VII, fortifications; and Volume VIII, geometric and mechanical studies. In each volume both the drawings and the pages, on which more than one drawing often were pasted, were numbered. In fact, the numbers mentioned in the catalogue of

1854, which probably predate the nineteenth century, are still found on many of the drawings. Thus the arrangement of Antonio's designs in twenty-one volumes, as they were described by his grandson in 1574, had been changed rather early. In 1865, when the architect Albert Jahn began working with the drawings in order to collect "materials for a critical illumination of the architectural works of the Italian Renaissance," the entire collection of architectural drawings in the Uffizi, bound and unbound, was divided among forty-nine volumes, but in Pini and Milanese's arrangement by artist.<sup>10</sup>

The achievement of Carlo Pini and the Milanese brothers cannot be overestimated. They were the first to rely on verifiable autographs to determine individual handwritings, and they already exhibited a surprising sureness in distinguishing between Antonio the Younger and his collaborators. Carlo Pini, the first curator of the drawings, subsequently published a huge collection of samples of artists' handwritings from the fourteenth to the seventeenth century, which still today is indispensable for the attribution of drawings.<sup>11</sup>

Even before Jahn, historically oriented scholars such as Guglielmotti had included drawings by Antonio da Sangallo the Younger in their specialized research.<sup>12</sup> But a historico-critical methodology for examining architectural drawings began to develop only with Heinrich von Geymüller. Geymüller had received a degree in engineering in Paris and studied architecture and architectural history at the Berlin Bauakademie, thus combining the tradition of French pioneers such as Percier and Letarouilly with the more historical German approach represented above all by his correspondent of many years, Jakob Burckhardt.<sup>13</sup> In 1864 he may have seen Letarouilly's unpublished bequest in Paris. Subsequently he spent two years in Italy, where on 5 February 1866 he proudly identified the plan in red chalk on U 20A as "the first completely certain drawing by Bramante for St. Peter's in Rome."<sup>14</sup> For his systematic study of the early designs for St. Peter's he could take advantage of the preliminary studies by Pini and Milanese. Like Jahn before him, he found the drawings reordered in folders according to masters.<sup>15</sup> Peruzzi's designs were to be found in folders 1 and 2, those of Antonio the Younger in folders 4-7. From 1868 onward Geymüller and Pini drew on their growing expertise to develop a more and more precise identification of the Renaissance drawings.

Geymüller's masterly analyses (for example, of the large red chalk plan U 20A), his sure instinct, and his

expertise have survived the oversubtle criticisms of more recent scholars who doubted his attribution to Bramante of the red chalk group (U 8A v., 20A, 104A, 7945A).<sup>16</sup> The care with which Geymüller proceeded is revealed by his doubts about the autograph nature of U 1A, despite the express testimony on the verso in Antonio's later handwriting. In other instances, Geymüller's views have been revised. Nevertheless, the specialization of recent years has only refined his method and hardly any of the more recent authors who have devoted themselves to this material is gifted with a comparable eye. The quality of the reproductions in his monographs on St. Peter's of 1875-80 and on Raphael of 1884 has never been achieved again.<sup>17</sup>

The discoveries of Pini, Milanese, Geymüller, and others then went into Ferri's 1885 catalogue of the architectural drawings of the Uffizi, to this day the only one and of inestimable value for our corpus. Ferri even tried, not altogether convincingly, to define Antonio as a figural draftsman.<sup>18</sup>

While the monographs of Gustav Clause of 1910 and Lukomsky of 1930 on Antonio da Sangallo the Younger contributed only slightly to our knowledge of his drawings, we remain indebted to Bartoli's large and superbly illustrated work of 1914-22 on the drawings of antiquities in the Uffizi by Renaissance architects for a further substantial contribution to our knowledge of the various hands, above all those of the Sangallo circle. Astonishingly, it then took until the eve of the Second World War before another important scholar, Gustavo Giovannoni, took on Antonio's drawings and, in particular, those of his later career. Even Geymüller had not considered anything after 1537, since he thought that the level of the later drawings declined. As Salmi reports in his foreword of 1959, Geymüller had himself encouraged Giovannoni to undertake his great Sangallo monograph, certainly on the basis of the acute individual studies that Giovannoni had published from the time of his *Saggi sull'architettura del Rinascimento* of 1935. When Giovannoni died in 1947 the work was by no means finished. He acknowledges in an introductory chapter that he was inspired directly by Bartoli, and that his book should really be entitled "L'opera di Antonio da Sangallo nei disegni degli Uffizi, riveduti e commentati." In actuality, his text relies primarily on an identification, novel in many regards, of the graphic projects, of which he catalogued more or less precisely over a thousand. Unfortunately, the work trails far behind Geymüller and Bartoli in the number and quality of the illustrations as well as in its philological apparatus, so that Gio-

vannoni's insight can be appreciated only partially by the reader.

A long series of monographic investigations on Antonio's individual works and projects followed in the wake of Giovannoni's book, for the most part from the pens of scholars who were directly or indirectly his pupils. The *Bibliotheca Hertziana*, too, became the breeding ground for further studies of the work of Antonio the Younger after 1953, when Franz Graf Wolff Metternich founded a center for studies of Renaissance architecture and in particular of New St. Peter's. Researchers like Heinrich Thelen set new standards for the study of the architectural drawings with his edition of Borromini's drawings.<sup>19</sup>

By the time Wolfgang Lotz stepped in as Metternich's successor as director of the *Bibliotheca Hertziana* in 1963, he had already dedicated a fundamental study to the representation of space in the architectural drawings of the Renaissance. Since then, the criticism of drawings has new criteria at its disposal for study, particularly as regards the evolution of the representation of architectural space and the process of design from the Late Middle Ages, criteria that Lotz himself demonstrated in the case of Antonio's drawings. The extent to which his conclusions, particularly for the Bramante and Sangallo circle, are still valid today will be among the issues to be explored in studies within this volume. In the English translation of his 1977 article, Lotz still concurred with Ackerman's judgment: "None of his [Antonio the Younger's] nearly one thousand architectural drawings in the Uffizi can be dated with certainty before 1517 or 1518."<sup>20</sup>

It would lead us too far afield to try to do justice to all the individual studies that have appeared in the wake of the research of Giovannoni, Metternich, Lotz, and others during the last few decades on the most important complexes of Antonio's architectural work.<sup>21</sup> Many of these studies draw support, much more carefully than even Giovannoni, from long-neglected archival material, so that in the meantime the majority of Antonio's buildings have been thoroughly researched. It is this very splintering of our formidable current state of knowledge, however, that makes the synthesis of a corpus all the more desirable, and so it is only to be welcomed that the majority of our collaborators have, for the most part, been recruited from among these authors. In short, the course of research in the last thirty years on Antonio da Sangallo the Younger was propitious for our undertaking, and at present the time is ripe for an edition of the corpus.

### *The Collection of Antonio da Sangallo the Younger*

The architectural drawings of Antonio da Sangallo the Younger survive in greater numbers than those of any earlier architect. Yet, like Michelangelo, Antonio the Younger seems to have regarded only a part, probably the smaller part, as worth saving.<sup>22</sup> The collection of the drawings, therefore, poses enormous questions. Were they saved to document a building process? As works of graphic art? As a collector's item? Why are there so few finished drawings of the buildings as they were completed? Why so many hasty sketches?

For the architects of the Renaissance, and especially for the members of the Bramante and Sangallo circle, architecture had become a science. It presupposed not only a high measure of artistic creativity and technical ability, but also humanistic and archaeological knowledge as well as minute calculation.<sup>23</sup> In these terms, drawing of mathematical precision was necessary not only for the incorporation of older structures within the new, as was common practice especially in Rome, but also for the construction of fortifications and for making visual records of antiquities, where the architects would have to search out individual elements of a monument in cellars, courtyards, or gardens and recombine them to the precise fraction of a *palmo*.<sup>24</sup> Drawing, therefore, was knowledge. Antonio also preserved purely conceptual sketches—not so much as documents of a self-conscious inventor than as protocols of his thought processes, possibly useful to him or his followers at some later point.

Antonio the Younger and his drawings thus occupy a key position in the history of European architecture; he may even have hoped that the *Fabbrica di San Pietro*—to which he belonged for at least thirty-seven years and which he directed for twenty-six years—and his own workshop as well would outlive him to create a genuine tradition in the sense of the medieval workshops. There talents could be trained in practical matters of construction as he himself had been trained following the works and drawings of the great masters. The drawings thus would provide a record, the *archivio* of his thoughts that he refers to from time to time.

As part of the process of ordering his thoughts, then, Antonio the Younger had also attempted to identify and order his sheets. The first time might have been in the critical years after the Sack of Rome in 1527, when commissions slowed. In the same years he also found the time to attempt a translation and commentary of Vitruvius.<sup>25</sup>

In the lines of the 1531 draft for the foreword we

hear the self-conscious voice of a man who during his life had not only tried to understand and interpret Vitruvius but also to translate him into practice. One of the greatest obstacles to understanding Vitruvius's often obscure text was the loss of the illustrations: "La settima e la più importante (delle cause . . . che . . . non è anchora stato inteso questo nostro auctore di Vitruvio) si è che per la brevità dello scrivere lui promette mostrare li corpi formati col disegno e sottoscritti, quali non si trovano, o che la lunghezza del tempo li abia fatti perdere o che di se perché li ignoranti non avessino a sapere quanto che lui." According to Antonio, Vitruvius wanted to prove his abilities to the emperor, who always gave the big commissions to others, but he took care not to lay open his inventions to imitation by others. Vitruvius's followers had nevertheless made his principles their own. Antonio believed further that it was possible to rediscover Vitruvius's theories in imperial architecture and that no one was better suited to do so than he himself.

This lofty goal thus demanded that he make a patient and detailed comparison among Vitruvius's doctrines, the surviving buildings, and the few other pertinent antique texts. Both texts and buildings had to yield their secrets, each testing the other in a continual process of exchange. Both leave their traces in Antonio's drawings and so he might have preserved them, not least of all for that moment when he would find the time for the completion of his Vitruvius commentary.

That he got down to the business of ordering and identifying his drawings toward the end of Clement VII's pontificate is revealed by inscriptions such as "Modani dela vigna del papa" on U 718A v., or "per la vigna del papa" on U 1356A v.<sup>26</sup> Around 1518/19, during the time they were executed, Antonio would hardly have indicated the villa of Cardinal Giulio de' Medici as "del papa," and after the death of Clement VII he would certainly have added his name to the pope's title. The handwriting tells us that the inscription "Finestre del chardinale farnese" on U 1001A is even to be dated to a time before 1528.<sup>27</sup> If he failed to inscribe many other sheets of a similar character, that is certainly because he rarely found time for such retrospective activity in the busy world of his architectural practice. The more complex and numerous his tasks, however, the more he may have made it a habit to identify his sheets immediately, if only to inform his many collaborators who then had to fill out the sketches or carry them out. Thus after 1538 he notes on U 57A "per santo pietro per sopra li pilastri delle

navette tonde quando se avera a fare li architravi grandi."<sup>28</sup> Occasionally his memory fails him, as for example in the later inscription on U 257A r., a facade design for St. Peter's from 1518, which he refers to as "faccia delo emiciclo tondo di s.to pietro," surely because during these years he had above all else been occupied with the south transept.<sup>29</sup> With the ground plan fragment on the verso of the same sheet he restricts himself to the uninformative formula "modani di più cose." On the plan project U 1146A, most likely by his co-worker Riniero da Pisa, for the reinforcement of the dome piers at Loreto, he even admits, "non so dove e non so di chi."<sup>30</sup> If Antonio's identifications, noted mostly on the less important sides (generally called the verso today), are often repeated by a later hand on the more important side (generally called the recto), that is certainly because his heirs preserved the sheets in albums.

From projects in which he himself had taken part, Antonio the Younger also retained a few designs by Bramante, Fra Giocondo, and Raphael, such as U 1A, 6A, 136A, 169A, 287A, and 1356A. These too were inscribed and identified, mostly after 1530, and inserted into his collection.<sup>31</sup> Nevertheless it is likely that not all of the sheets were identified, and it is conceivable that he possessed further projects by Bramante and Raphael, such as U 20A, 242A, and, possibly, 560A.<sup>32</sup> In individual cases it can now no longer be decided, since other drawings by Bramante, such as U 8A v., or 104A, in which Giuliano da Sangallo also had a hand, could have ended up in the Uffizi by way of his heirs.<sup>33</sup> Among the many drawings of antiquities that Antonio collected, annotated, and corrected at various stages in his career are also to be found some sheets by as yet unidentified co-workers or assistants from his early period. The drawings of his cousin and close collaborator Giovan Francesco da Sangallo may, after his death in 1530, have devolved directly to Antonio the Younger.<sup>34</sup> Giovanni Battista, who outlived his elder brother Antonio the Younger by two years, left the Vitruvius translation to the Brotherhood of the Misericordia.<sup>35</sup> Most of his numerous drawings in the Uffizi nevertheless were created for Antonio the Younger, and for that reason were found in the latter's papers—like the many drawings by Labacco, Giovan Francesco, Riniero da Pisa, Baronino, and others in the Sangallo circle.

Antonio the Younger's bequest probably would have come down to us in less complete form if collectors and art dealers had not begun just then to take an interest in architectural drawings. Even before 1550, Jacopo Strada tried to purchase the architectural

drawings of famous masters like Raphael and Giulio.<sup>36</sup> At about the same time, Vasari included in his *Libro de' Disegni* the drawings of such great architects as Brunelleschi, Alberti, Bramante, the Sangalli, Peruzzi, Sanmicheli, Michelangelo, and Palladio.<sup>37</sup> He may have owned, and partially identified and framed, clean drawings by A. da Sangallo such as U 66A, 67A, 172A, 173A, 178A, \*189A, 199A, 259A, 829A, and 862A. But in the process he was not always able to distinguish between the two Antonios.<sup>38</sup>

Antonio da Sangallo the Younger died 3 October 1546. Pier Luigi Farnese, Duke of Parma and son of Paul III, immediately moved to acquire Sangallo's "cose, e spetialmente i disegni e i libri."<sup>39</sup> In vain Pier Luigi exerted his influence to have Giovanni Battista, who was attentive to his desires, named ward of the children and thus administrator of the inheritance. Pier Luigi had grown up from childhood in intimate association with Antonio the Younger's planning of the family palace in Rome, and had entrusted him in 1537 with the construction of his new residence at Castro.<sup>40</sup> Nevertheless, he was far more concerned with the projects "di San Pietro in poi" than with the designs for the numerous Farnese buildings. This fact can be interpreted in various ways, since from about 1509 Antonio had been part of the workshop of St. Peter's. But probably Pier Luigi meant neither the early phase under Bramante nor the years together with Raphael, but rather the time since around 1520 when Antonio the Younger headed all the major projects of the Papal State and thus also its fortifications.<sup>41</sup> Among the drawings of interest to the duke were Antonio's fortification projects for Castro, Parma, and Piacenza, whose dissemination Pier Luigi, in his own interest, could hardly have wished to see.<sup>42</sup> But even if he was not motivated primarily by political reasons to take this step, Antonio's drawings must have represented for Pier Luigi the very embodiment of Vitruvian teaching, the sum of all the knowledge that a modern architect and engineer could acquire, a treasure that for him as well as for his architects and engineers was more precious than the commentaries of a Fra Giocondo, a Cesariano, or a Serlio. After all, if it were a question of an overriding political need, surely the pope would also have been involved.

Until Antonio the Younger's only son, Orazio, reached his majority, his business affairs were administered by a distant relative, the sculptor Alberto da

Sangallo, and he and Orazio were probably the ones who together held the collection of drawings left after Antonio's death.<sup>43</sup> In any case, the drawings were in the family's possession until 24 September 1574 when Orazio's only son and heir, also named Antonio, suggested the possible donation of one hundred drawings to the Grand Duke of Tuscany, Ferdinand I: "Havendo trovato alchuni disegni di fortezze di città, tanto del Suo felicissimo stato, quanto ancora di altri luoghi."<sup>44</sup> He adds that they were distributed throughout twenty-one volumes, in which Antonio the Younger's drawings had been pasted after his death, apparently without a strict typological order. Probably with this gesture Antonio's grandson wanted to win the favor of the grand duke, whom he served for years as a diplomat and to whose fame he dedicated his historical writings. Perhaps he also hoped to move Ferdinand to the purchase of the rest of the drawings. When he picked fortification projects for Florence and other locations as part of the initial donation, he revealed that the informative content of the sheets still enjoyed top priority: Antonio the Younger's ideas for the modernization of fortifications had not yet lost their topicality.<sup>45</sup>

The majority of Antonio's remaining drawings probably were added to the grand duke's collection soon afterward. Others entered the collection about 1574 with part of Vasari's *Libro de' Disegni*.<sup>46</sup> The coincidence with the donation of Antonio's grandson hardly was casual. Apparently this was the moment when the grand dukes became interested in architectural drawings. Another volume of Vasari's *Libro*, which had come with Crozat, Mariette, and the Gaddi to Seroux d'Agincourt, was acquired only in 1798. Yet other drawings—surprisingly, some dealing with fortifications along with letters written to Antonio and books in his possession—came from the collection of the Gaddi and their followers. This probably had been miscellany kept in the possession of Antonio's grandson.<sup>47</sup> Finally, some designs for fortifications apparently were found in an album of Francesco De Marchi's in the Biblioteca Magliabecchiana in Florence.<sup>48</sup>

#### *Architectural Drawing before Antonio da Sangallo the Younger*

Architectural drawing is as ancient as monumental architecture. But only in the course of Antiquity did the methodology known to us from Vitruvius's treatise come to maturity.<sup>49</sup> The practice of making not only ground plans—as documented, for example, by the Carolingian plan for St. Gall—but also elevations

\*Sheets illustrated in the present volume (pages 275–494) are indicated by an asterisk preceding the Uffizi number. Sheets not asterisked will be reproduced in Volumes Two and Three of this corpus.

and sections, could not have been completely lost during the time prior to the beginning of the Gothic. Villard de Honnecourt's builders' lodge book presents the broad spectrum of possibilities in drawing during the early thirteenth century, which included the complementary representation of interior and exterior walls.<sup>50</sup> Thus it is not very credible to argue, as has repeatedly been done, that Gothic builders had largely dispensed with the aid of drawing.<sup>51</sup> After the artistic means for representing spatial depth had mostly been forgotten, Gothic architects perfected above all purely orthogonal, geometrically constructed methods of designing.

Giotto and the great Sieneese artists were the first to re-create the prerequisites for a pictorial style of architectural drawing. Even though orthogonal sketches remained the basis for all architectural designing, in Tuscany they increasingly were supplemented by models and by presentation drawings of the highest pictorial quality.<sup>52</sup> Significantly, especially in Florence with its feeling for plasticity and its democratic constitution, the use of models provided not only patrons and the interested public but also builders and even the architect himself with a concrete representation of a project; and models could hardly be completed without orthogonal preparatory drawings.<sup>53</sup> By means of shading and the characterization of materials through color, presentation drawings—prime examples are those of the campanile of the Duomo and the chapel of the Piazza del Campo in Siena—gained a previously unknown clarity.<sup>54</sup> At the same time, methods for linear perspective were devised: to give, for example, a more plastic appearance to the portal zone in the designs for the facade of the Cathedral of Orvieto.<sup>55</sup> Even architects made some use of perspective, as when Antonio di Vincenzo clarified his copies of a cross section and ground plan of the Cathedral of Milan in 1389 by means of perspective details.<sup>56</sup> But even now linear perspective had a merely secondary function—like color and modeling—in the architectural drawings of the Trecento, whether in orthogonal elevations or in cross sections. Jacopo della Quercia may have been the first to make extensive use of perspective in his presentation drawings of 1408 onward for the Fonte Gaia.<sup>57</sup> By 1367, such a mass of drawings and models had already been collected in the Florentine builders' lodge that it became necessary to destroy everything not relevant to the current project.<sup>58</sup> This is all the more noteworthy because numerous presentation drawings and working designs, as was already common in Antiquity and the High Gothic, were drawn on walls and floors.<sup>59</sup>

As a sculptor and as chief architect of the Florentine cathedral, Brunelleschi knew all the currently used methods of representation.<sup>60</sup> When he built a model of the cathedral dome to scale, or showed the Baptistery in correct perspective for the first time, or designed an elevation to scale for the Loggia degli Innocenti, using the "braccio piccolo," he was continuing the tradition of the Trecento. And when he restricted his presentation project for Santo Spirito to a ground plan, and in his other buildings, too, left an astonishing number of decisions to verbal explanation, he did so on the basis of personal experience and preference, not because he was unable to do otherwise.<sup>61</sup> We only have to read Manetti's description of Brunelleschi's studies from Antiquity to learn of his familiarity with orthogonal representation. Apparently he simply sketched the orthogonal course of individual walls "grossamente" on squared-off strips of parchment and added measurements and clarifying symbols, certainly with the intention of making clean copies of everything later at home.<sup>62</sup> Those elevations that he restricted to the most important elements must have been similar to Giuliano's presumed copy of his design for S. Maria degli Angeli.<sup>63</sup>

Architectural drawing became increasingly more important during the first decades of the Quattrocento; by 1464 Filarete was able to assert that "il disegno è fondamento e via d'ogni arte che di mano si faccia. . ."<sup>64</sup> In his description of the design process, Filarete distinguished between several stages of design: sketches not drawn to scale—the "disegno in di grosso"—in which the architect illustrated his concept for his patron; the "disegno proporzionato," provided with a grid divided into *braccia* and thus with exact measurements; and the "disegno rilevato," or wooden model—intended for presentation as well as execution—which was constructed directly from the scale drawing.<sup>65</sup> In all of this, probably only the grid on the drawing paper, which Brunelleschi and Alberti had already used,<sup>66</sup> went beyond normal building practices.

For the illustrations in his treatise, Filarete typically preferred perspectival elevations and cross sections—such as had served in Giovanni di Gherardo's 1425 representation of the dome of the Florence cathedral—as a graphic equivalent to wooden models.<sup>67</sup>

While Filarete thus reflected the building practices of his time, Alberti tried to put the training and methods of the architect on a more systematic basis.<sup>68</sup> Because the real achievement for him lay in the "lineamentum"—not, that is, in the material realization, but in the artistic concept—he gave twice as much

importance to the methodology of designing.<sup>69</sup> The creative architect should, therefore, restrict himself to purely orthogonal means of representation—that is, to ground plans, elevations, and cross sections—and then translate these into a wooden model (“factis asserula seu quavis re”) that would include information about the interior organization, such as the thickness of the ceilings (“parietum faciem et tectorum firmitatem”), and thus would be partially open.<sup>70</sup> The budding architect should thoroughly measure and analyze the best buildings, and even use models, so as to learn the principles of good construction.<sup>71</sup> An architect has to rely on a knowledge not only of geometry and arithmetic but also of painting—which he uses as the equivalent of drawing—in order to be able to put his ideas on paper, test them, and prepare for their translation into a model.<sup>72</sup> He should, however, leave the visualization of architecture through perspective and chiaroscuro to a painter and keep his models free of all painterly enticements.<sup>73</sup>

We do not know to what extent Alberti followed these prescriptions himself. The random survival of graphic efforts from his hand, such as the simple plan of a bath complex or the rapid sketch for the volutes of S. Francesco in Rimini, by no means conveys an adequate impression of his abilities as a draftsman, as must have been required by the design of the complex system of S. Andrea in Mantua, if nothing else.<sup>74</sup>

In any case, many decades were to pass before his principles were accepted. Francesco di Giorgio, Giuliano da Sangallo, and Bramante, his most important successors, certainly proceeded differently. Surviving material—above all studies from Antiquity, illustrations in treatises, and Bramante’s Prevedari engraving—permit only indirect conclusions about building practices. These practices are probably most immediately reflected in the drawings of Cronaca, who in contrast to the other three masters was a pure architect and, probably for this reason alone, primarily made use of orthogonal representation.<sup>75</sup> But purely technical, and often quite artless, orthogonal designs were not yet deemed worthy of preservation, whereas shaded perspective views were certain to arouse admiration.

Francesco di Giorgio (1439–1501) was already following Alberti’s advice to learn from good architecture, and on his numerous journeys he sketched and reconstructed the monuments of Antiquity.<sup>76</sup> Coming as he did from the then *retardataire* school of Siena, however, he did not have sufficient preparation to do justice to Alberti’s requirements. Even though he captured the monuments astonishingly well in some of the

sketches he made at the site—for instance, S. Stefano Rotondo on U 330A v.—his clean drawings of the Colosseum, Pantheon, Basilica of Maxentius, and S. Costanza are seen in a conditioned way and schematically simplified. In his reconstructions of destroyed complexes, such as the Capitoline and the Serapaeum, he took less from Antiquity than from his own time.<sup>77</sup> It is not by chance that the path toward an analytical understanding of the ancient monuments followed by his foremost student Peruzzi was far longer than that of his junior by four years, Antonio da Sangallo the Younger.<sup>78</sup> Be that as it may, in his representations of ancient buildings, Francesco di Giorgio had already tried to convey a maximum of information by showing—in the Turin Codex, for example—not just ground plans but also perspectival sections and overall views, albeit usually without a scale or measurements.

By origin, the younger Florentine Giuliano da Sangallo (ca. 1445–1516) was certainly closest to Alberti and may even have known him personally.<sup>79</sup> On the first page of the *Libro* he asserts proudly that he began making studies from Antiquity as early as 1465.<sup>80</sup> He may have had a hand at that time in the construction of the Palazzo Venezia, which was under the direction of the papal architect Francesco del Borgo, a close follower of Alberti.<sup>81</sup> At any rate, some reworked copies of his drawings from these early years have survived in two sketchbooks. They must have been similar to the ground plan of S. Costanza on U 4372A, probably an anonymous copy of a lost original by Giuliano, which he then recopied in simplified form on folio 16 of the *Libro*.<sup>82</sup> Although Giuliano used both these sketchbooks until the last years of his life, the *Taccuino Senese* corresponds to an earlier phase in his development: It contains a disproportionately large number of projects from the time before 1500, and its generally harder style of representation never reaches the new level achieved in architectural drawing in Rome after 1504. Not by chance, about 1503/4 Antonio copied his earliest drawings after the antique from the *Taccuino* and not from the *Libro*, which probably did not yet exist (see Figs. 7, 8).<sup>83</sup>

Whereas Giuliano documented his own inventions in the *Taccuino* merely with cursory ground plans, he depicted the ancient monuments and Andrea Bregno’s Cappella Piccolomini—much admired since its construction—in elevations in partial perspective, with some hatching and a hard linear style that shows the drawings to be close in time to the purely orthogonal sheets of his compatriot Cronaca. His theoretical studies of orders—and especially of the Doric entablatures “in Boario”—from which the young Antonio may

have profited, and which look far more archaic than comparable studies by the Bramante circle from about 1506, probably must also fall in the time before 1504 (see Fig. 13).<sup>84</sup> Only the Colosseum he showed with a ground plan, perspective section, perspective elevation, and pictorial view, thereby approaching Alberti's demand for thoroughness (see Fig. 11).<sup>85</sup> But even these cannot stand comparison with Antonio's probably later precise structural measurements of the same building of about 1504/5 (see Fig. 10).<sup>86</sup> Only in the details of the *Taccuino* did Giuliano—again like Cronaca—give minute measurements, breaking the Florentine *braccio* down into *punti* (0.000203 m), that is,  $\frac{1}{2880}$  (see Fig. 13).<sup>87</sup>

In Bramante's circle, the *Taccuino senese* was bound to seem antiquated before long, and this may have led Giuliano to rework his drawings of Antiquity in a more exacting style soon after his arrival in Rome, that is, sometime after the spring of 1504. Compared with the *Taccuino*, the earliest part of the Codex Barberini, the so-called *Libro Piccolo* (fols. 1–17), is distinguished by its greater care and more corporeal sensuousness. It can be dated securely before 1508 by copies in the Codex Escorialensis.<sup>88</sup> When, soon afterward, Giuliano reworked his drawings of ancient triumphal arches—among them even some from the *Taccuino*—in the *Libro degli archi* (fols. 18–27), he chose a larger format to which he adapted the *Libro Piccolo* by adding strips to the margins. These reworked drawings reveal a closeness to his design of 1505 for a gallery for the papal trumpets but especially to his designs for Loreto of ca. 1506/7, with their greater contrast of light and shade.<sup>89</sup> He could well have made the fantastic reconstructions of ancient monuments that he developed on empty pages of the *Libro Piccolo* while he was in Florence in 1507–13 and dependent on his own means, without a partner to criticize him. He may also have made the copies after Ghirlandaio that were found in the third fascicle (fols. 28–37) at that time.<sup>90</sup> Only in the fourth fascicle (fols. 38–47), which he probably began in Rome before 1510, did he approach the spirit of Bramante, as in his drawings of the tomb of Theodoric of about 1506/7 (see Fig. 18).<sup>91</sup> Not until he returned to Rome in the spring of 1513 and began working closely with his now grown son, Francesco, did he make the drawings in the last part of the *Libro*, for which he adopted Bramante's more rational and precise methods of representation.<sup>92</sup> As in his contemporaneous designs for the Torre Borgia and the facade of S. Lorenzo, he increasingly combined painterly chiaroscuro with strict orthogonality,<sup>93</sup> and in studies

like those of the Serapaeum he achieved such precision that even Antonio the Younger used them as models,<sup>94</sup> as just now can be observed in an exchange of ideas he had with his more advanced nephew.<sup>95</sup>

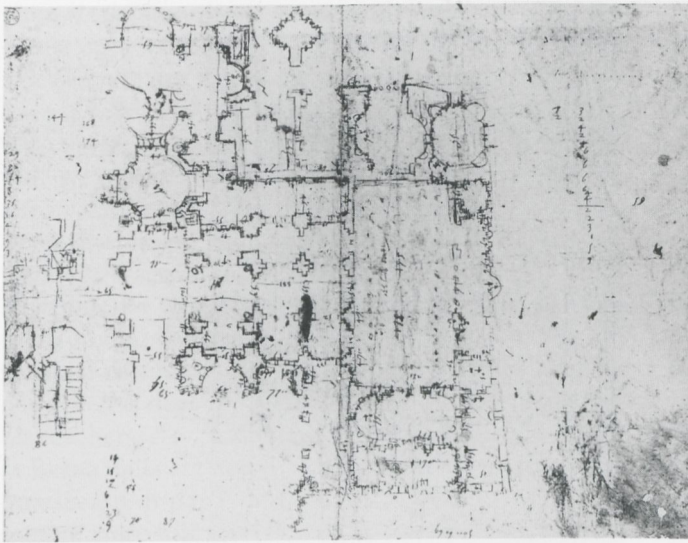
The chronology of the *Libro* presented above is obscured by the fact that, like Francesco, Giuliano filled empty pages, marginal strips, and smaller areas of the earlier fascicles with later drawings, just as he recorded his July 1513 measurements of the Colosseum on the much earlier folio 7 r. of the *Taccuino*, or added capitals on folio 33 v.<sup>96</sup> In those last years, then, he was no longer concerned with systematization or coherence. Such details as the Doric entablature in his designs for S. Lorenzo show that he never wholly adapted to Bramante's world, and his nephews must have moved farther and farther away from him at that time in their understanding of architecture, especially ancient architecture.

There is no doubt that Alberti's postulates were realized by Bramante (1444–1514) as soon as he moved from Milan to Rome. Bramante had already shown in 1481, in his Prevedari engraving, that he was more capable of representing a complex interior than any of his contemporaries.<sup>97</sup> Indeed, in all probability he had already worked out this representation earlier for himself in orthogonal sketches or even in models. In any event, the Prevedari engraving even shows vaults and the thickness of walls, just as Alberti had recommended. He was familiar with the orthogonal triad not only from Alberti's treatise, to which he was indebted in so many ways, but also from the cathedral builders' lodge in Milan.<sup>98</sup>

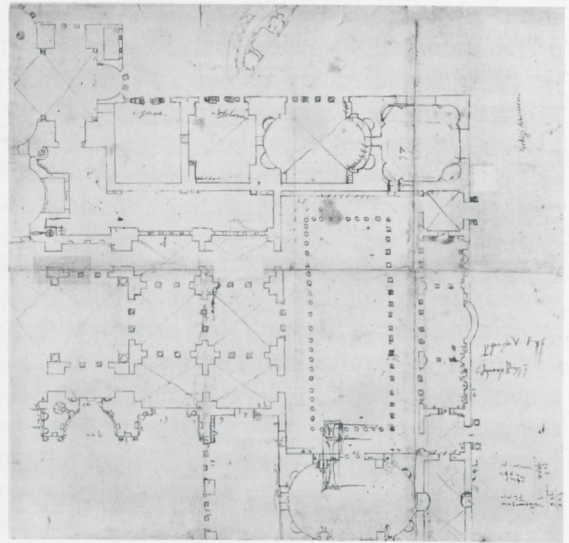
How Bramante's Milanese clean drawings may have looked is shown by a presentation drawing in the Louvre of about 1505 for a church facade possibly made by his pupil Cristoforo Solari.<sup>99</sup> Its main story is drawn in strict orthogonals with some perspective visual aid offered only in the pediment zone. Giuliano, in contrast, still used a perspective elevation in the presentation drawing—also from about 1505—of his design for the papal musicians' gallery. Only around 1513, in his design for the Torre Borgia, did he decide to use an orthogonality comparable to that of Cronaca's drawings or the project in the Louvre.<sup>100</sup>

Thus, already during his time in Milan, Bramante seems to have followed Alberti's distinction between a “painterly” view, such as the Prevedari engraving, and a primarily “architectonic” presentation drawing. Some impression of the character of his conceptual sketches may be gained from the contemporaneous drawings of his friend Leonardo.<sup>101</sup> Leonardo alternated, according to object or idea, between orthogo-





1 Donato Bramante(?). Ground plan of the Baths of Diocletian, detail (U 104A r.; ca. 1505).



2 Antonio da Sangallo the Younger. Ground plan of the Baths of Diocletian (U 2134A v.; ca. 1505/6).

nal elevations and perspective views; he combined ground plans with interior or exterior bird's-eye views; and sometimes he even included the ground plans in perspective foreshortenings.<sup>102</sup> He was also familiar with the use of the compass.<sup>103</sup> Bramante may have been equally free in his sketches of ideas and projects when they were merely intended to contribute to the solution of an immediate problem.

Before 1500 Bramante had studied Roman monuments only sporadically, as his Milanese buildings indicate. According to Vasari, he made up for lost time during his first years in Rome.<sup>104</sup> On U 104A r., probably his only extant drawing after the antique, he measures the ground plan of the Baths of Diocletian with an exactness still unknown in Francesco di Giorgio's studies or in Giuliano's in the *Taccuino senese* (Fig 1).<sup>105</sup> Although he invariably rounds off his *palmi romani*, one senses throughout that he was no longer satisfied with schematic approximations. Rather, he examines the mutual relationship of individual rooms, the articulation of the walls and staircases, and the requirements of structure wholly in Alberti's sense—surely because in his contemporary projects for St. Peter's he wanted to profit from the principles involved in the plans of the baths. On U 104A v. he sketched an elevation scheme of the entrance facade and various details in pure orthogonal projection, and in a ground plan sketch he at once translated the compositional principle of the baths surrounded by a courtyard into a project for St. Peter's all his own.<sup>106</sup>

The fact that Giuliano da Sangallo summed up two detail measurements of the great peristyle in his own hand indicates that he at least participated in its analysis. Thus the sheet probably was made during his close collaboration with Bramante at St. Peter's in 1505. Bramante's pioneering achievement soon was superseded by Antonio's much more exact measurements, which seem to take their point of departure from U 104A r. and can hardly date after 1506 (Fig. 2).<sup>107</sup> The ground plan of a relatively well-preserved building like the Baths of Diocletian would in no way have sufficed for Bramante's purposes; elevations, cross sections, and views had to be added, as they presumably also existed in the planning of St. Peter's.<sup>108</sup>

Bramante must have made such precise and systematic measurements from the beginning of his stay in Rome. The Doric entablatures of the Tempietto, Palazzo Caprini, or the Cortile del Belvedere, dating from 1501-4, presuppose a hitherto uncommon precision, both for the projects and for the preliminary studies, which must have included not only important Doric entablatures but also the specifications given by Vitruvius and Alberti, and must have gone far beyond comparable drawings of Doric orders in Giuliano's *Taccuino*.

The full extent of the revolutionary changes that Bramante effected even in the realm of architectural drawing is evidenced by the new precision and systematization cultivated by Peruzzi, Antonio da Sangallo, and Giancristoforo Romano from about 1506

on.<sup>109</sup> It was then—that is, at the very moment when preparations were being made for the construction of St. Peter’s—that the seeds sown by Alberti’s *De re aedificatoria* really began to grow.

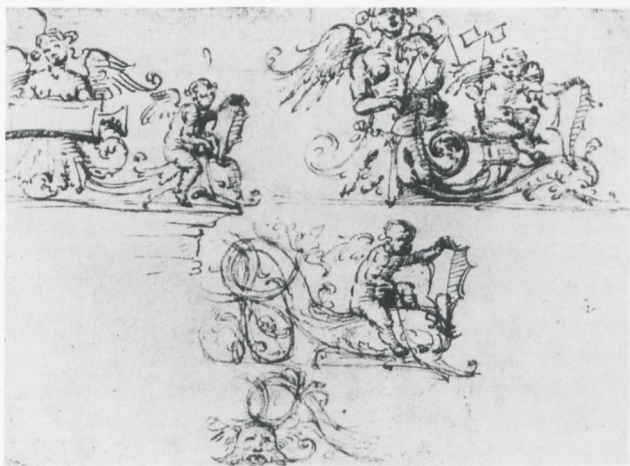
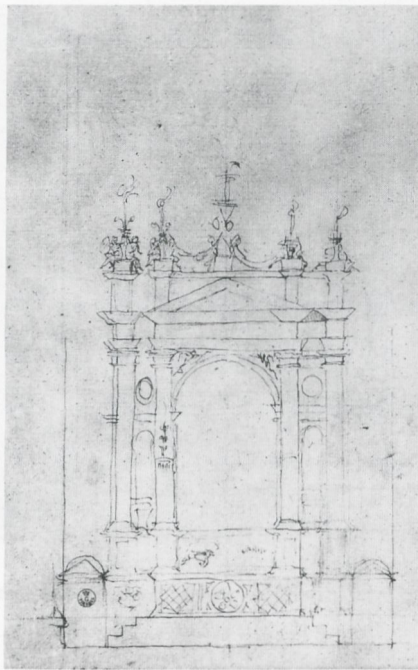
*Antonio’s First Endeavors and his Collaboration with Giuliano and Bramante*

Giorgio Vasari, the only close and well-informed contemporary to comment on Antonio da Sangallo’s artistic beginnings, reports that he learned carpentry “nella sua fanciullezza.” He must then have been around ten years old, and Vasari reports that his architectural talent soon became apparent and that he then followed both uncles to Rome.<sup>110</sup> Given his birth on 12 April 1484, Antonio the Younger would most likely have first entered into training under Antonio the Elder, who was occupied primarily between 1496 and 1498 with the coffered ceiling of the “sala nova” of the Palazzo della Signoria,<sup>111</sup> an experience that stood the younger Antonio in good stead for the rest of his life.

How important Antonio the Elder was for the boy’s formation is shown above all by the affinity of their drawing styles and handwritings (see Fig. 7b, n). The sketchy, free, sometimes expressive manner of the two Antonios seems, compared with Giuliano’s style, to have been formed primarily by Filippino (Figs. 3, 4).<sup>111a</sup> We do not know when Antonio the Elder’s relationship with Filippino began; it certainly existed in 1494, and it is conceivable that Filippino, who had just returned from a sojourn of many years in Rome, gained a growing influence over Antonio the Elder during Giuliano’s absence. Since the effect of this influence survived long after Filippino’s death in 1504, Antonio the Elder must have been instructed relatively early by Filippino, who was almost the same age.

From early 1497 on, young Antonio must have become also the student of Giuliano, who had just returned from a two-year absence and shared his home and workshop with his brother.<sup>112</sup> Not only was the young Antonio able to profit from Giuliano’s profound knowledge of ancient architecture and the Vitruvian orders, a knowledge captured in the latter’s *Taccuino senese*, but he was able to garner his first experience in design and execution at the building sites of S. Maria delle Carceri in Prato, Palazzo Gondi, S. Maria Maddalena dei Pazzi, and the Sangalli’s own house in Borgo Pinti.<sup>113</sup>

It is unlikely that the young Antonio followed Giuliano to Loreto in 1499, but it is conceivable that he accompanied Antonio the Elder to Rome in



3 Antonio da Sangallo the Elder. Sketch for the high altar for the Madonna di S. Biagio at Montepulciano (U 1568A r.; ca. 1520).

4 Filippino Lippi. Decorative motifs with putto and a dolphin from the Golden House of Nero (private collection).

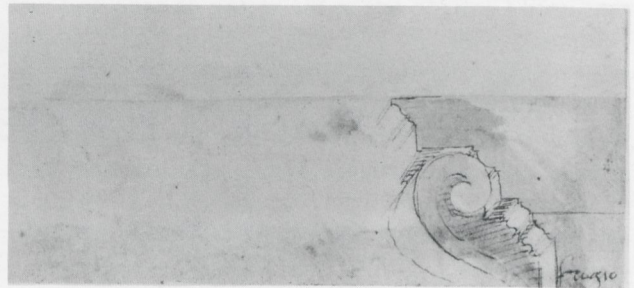
1499–1502, in order to participate in the construction of the coffered ceiling in S. Maria Maggiore and the Rocca of Civita Castellana—both works that would have a further influence on Antonio’s early endeavors.<sup>114</sup> On 14 January 1504, the then nineteen-year-old was once again living in extremely modest circumstances with his parents in Florence, where Giuliano since 1500 and Antonio the Elder since 1502 were again active.<sup>115</sup>

In the few autobiographical remarks that Antonio the Younger weaves into the 1531 foreword to his planned edition of Vitruvius, it is significant that he nevertheless does not acknowledge at all his uncles as his teachers: “. . . abbiamo consumato li studii nostri in Roma dalla eta nostra di anni XVIII al principio del pontificato di papa Julio nel MD. . . [lacuna]. . . e sempre stato alli servitii de’ detti pontefici in le loro fabriche al tempo di papa Julio sotto Bramante sino a l’anno. . . [lacuna] del pontificato di Lione, dipoi in compagnia di Rafaelo da Urbino fino all’anno. . . [lacuna] di Lione. . . [lacuna].”<sup>116</sup>

Notably, he does not maintain that he first came to Rome under Julius II, but rather speaks only of the beginnings of his studies. Nor does he mention any other teacher, only his uninterrupted work on the papal buildings, which extended into Leo X’s first year, under Bramante, and subsequently continued in collaboration with Raphael. With this, he is mistaken about a span of almost two years, for he probably did not come to the court of Julius II until shortly before his twentieth birthday. His imprecise memory for dates is also revealed by other gaps in his foreword. That he was still primarily under Giuliano’s influence during his first years in Rome is shown by his early drawings; Vasari was also correct in this respect.

The same can be said for Vasari’s report that Antonio did not become Bramante’s collaborator until Giuliano returned to Florence in the spring of 1509. When Antonio, together with an apparently older compatriot, Sebastiano di Marco da Sangallo, constructed the triumphal arch for the return of Julius II from Bologna in March 1507, he was surely following a project of Giuliano’s.<sup>117</sup> Well qualified as he was for such a task, Giuliano was perhaps even entrusted with the artistic direction of the ceremonial procession, even though, according to Vasari, he too accompanied the pope to Bologna.<sup>118</sup> The two carpenters were probably still under Giuliano’s direction in July 1507 when they worked on the papal Rocca of Nettuno, which was begun about 1501, probably by Giuliano’s brother Antonio the Elder.<sup>119</sup> At any rate, in 1507 Antonio the Younger was not yet a member of the builders’ lodge

of St. Peter’s and the Cortile del Belvedere. As late as December 1508, when Giuliano returned from Florence at the request of the pope in order to complete the fortification of the Vatican and Borgo, it was he and not Bramante who vouched for Antonio’s work in the Rocca of Ostia and saw to it that Antonio was working at the Vatican just when the pope was staying in Ostia.<sup>120</sup> Antonio’s work on the new Vatican apartments of Julius II—“pro portis finestris et altris lignaminibus”—is documented for June 1508<sup>121</sup> and continued probably until 1509. He could have designed the fireplace for the Sala di Costantino and the coffered ceiling on U 1623A, 1646A, and 2153A at that time, perhaps even as a substitute for Giuliano, who was mostly absent from the end of 1507 until the end of 1508 (Fig. 5).<sup>122</sup> The executed version of this fireplace differs from Antonio’s design primarily in the

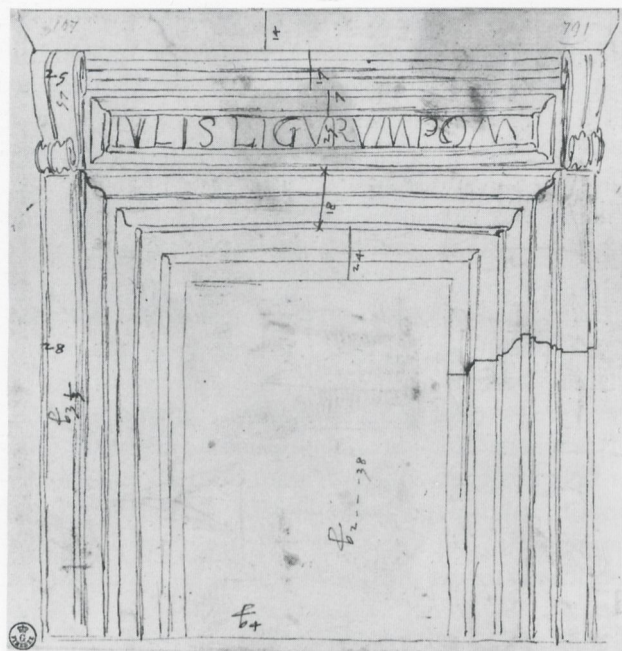


5 Antonio da Sangallo the Younger. Project for the chimneypiece of the Sala di Costantino (U 1623A v. [lower part] and 1646A v. [upper part]; ca. 1508).

atectonic relation of the consoles to the entablature, which brings it closer to Giuliano's more decorative style—and thus Giuliano may have partially corrected Antonio's project.<sup>123</sup> Only toward 1511–13, after Antonio had changed the logogram for *braccio*,<sup>124</sup> did he complete the sketch—erroneously attributed to Labacco—of Julius II's fireplace in the Magliana, whose irregular measurements in *braccia fiorentine* and *minuti*, and overly steep proportions, indicate a copy rather than an original design (Fig. 6).<sup>125</sup> This fireplace looks so much more rigorous than that of the Sala di Costantino that it could have been designed by Bramante himself after Giuliano's departure in the spring of 1509.

From the fact that Antonio was working in the papal apartments of the Vatican as well as at the *rocche* of Ostia and Nettuno ca. 1507/8, and, what is more, largely in Giuliano's entourage, we may conclude that he was not promoted to Bramante's assistant until Giuliano left in the spring of 1509 and was before that Giuliano's closest collaborator. While the pope commissioned large new structures to Bramante, he appears to have entrusted Giuliano with the completion of the interiors and fortification of residences already existing or begun. These included the Castel Sant'Angelo, whose loggia was erected by Giuliano in 1504/5,<sup>126</sup> the Magliana, and the Rocca in Civita Castellana, where Giuliano had probably already succeeded his brother by 1506.<sup>127</sup> As a close collaborator, Antonio may also have, as a rule, lived in his uncle's house near St. Peter's<sup>128</sup>—much as Giuliano and his brother had lived together in Florence and as Antonio, Gian Francesco, and surely also Aristotile and Antonio's brothers later lived together “in chasa nostra a San Rocho,” the half-finished house that Antonio had purchased in 1512.<sup>129</sup> At Giuliano's house, artists such as Michelangelo, and no doubt Bramante and Andrea Sansovino, came and went; there Giuliano stored his drawings from Antiquity and drew large parts of the Codex Barberini; and there, between the spring of 1505 and the spring of 1506, he created his first projects for St. Peter's, possibly with the help of his brother,<sup>130</sup> and in the following years the designs for the facade of Loreto.<sup>131</sup> The young Antonio thus had the uncommonly good luck to have resided since his twentieth year at one of the focal points of European art and to have participated in the execution, and probably also the projecting, of Giuliano's buildings. Bramante, for his part, may have discovered and encouraged Antonio's exceptional talent very early, though at the same time respecting the interests of Giuliano, who stood increasingly in his shadow.

But what kind of design methods might Antonio



6 Antonio da Sangallo the Younger. Elevation of chimney-piece at La Magliana (U 1058A r.).

the Younger have learned in the workshops of his two uncles? The earliest drawings, whose attribution to Antonio has long been agreed upon by scholars, stem from the time after 1508.<sup>132</sup> Yet if we analyze the changes in his handwriting during those years we discover a development that can also be traced backward, to his beginning period in Rome and even beyond, and that allows the attribution of other drawings.<sup>133</sup> Letters such as *g*, *ch*, *d*, or *z*, and numbers such as 3 still retain in 1507/8 some of the characteristics from his beginnings, which in the case of the 3 disappear fully only after 1513. Comparison of a few specimens from various times during these years will show this with greater clarity (Fig. 7).

At the beginning there is a much discussed group of drawings at the Uffizi that have been attributed to

7 (opposite) Handwriting of Giuliano, Antonio the Elder, and Antonio the Younger da Sangallo, ca. 1503–ca. 1514: a Giuliano 1505 (U 8A v.) b Antonio the Elder (U 1642A)

Antonio da Sangallo the Younger: c ca. 1503/4(?) (\*U 1564A r.) d ca. 1504/5 (U 1576A v.) e ca. 1504/5 (U 2049A v.) f ca. 1505/6 (U 2047A v.) g ca. 1506/7 (U 1482A r.) h ca. 1507/8 (U 992A r.) i ca. 1508/9 (U 1273A r.) j ca. 1509 (\*U 975A r.) k ca. 1510 (\*U 1484A v.) l with Labacco ca. 1512 (U 1193A r.) m ca. 1514 (U 1000A r.)

n Antonio the Elder 1508 (ASF, X di Balia, Responsive, 92, c. 133).

Amore Mio

a

A fine questo Disegno Antonio De' Angelis

b

Comma  
fra y ferro

c

lunga fiamma  $\frac{2}{3}$

d

Le lettere di manbrato  
sopra il ferro

e

Daluno se gno alano sono ii g nazi

f

una buca d'ometta le fiamme puobare ella  
de dia pitto tre quarti de uno piede ch'ubedie  
d'aque fo su p fiammo opiato de n'ro d'etia mitto

g

L'arte di m'ra

h

na fiamma  
fiamma  
lamia

i

gama lo p'osa  
fiamma  
di p'

j

pficia al p' e g'aci  
g'aci al p' e g'aci

k

gama  
lunga fiamma  
Larga fiamma VIII p'

l

L'arte di m'ra

m

sporo a... Al' g'aci...  
S'itor Ant' f' S'ongallo

n

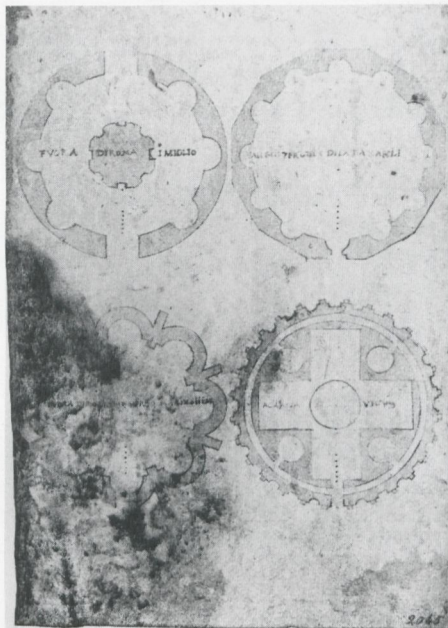
various hands. These parchment sheets, which belong together by virtue of their similar format and drawing technique, obviously belonged to a *Taccuino* modeled on Giuliano's.<sup>134</sup> It is not by chance that the probable earliest drawings in this group reproduce models by Giuliano.

Thus the four ground plans of ancient centralized buildings on U 2045A v. correspond, significantly, not to Giuliano's models in the Codex Barberini but to the less careful drawings on folio 16 of Giuliano's earlier *Taccuino senese* (Figs. 8, 9).<sup>135</sup> This alone is an important argument for dating them to the period before 1508. And if two of the three ground plans on U 2045A v. deviate slightly from those on folio 8 of Giuliano's *Libro*, it is because Antonio probably was following lost models closer to the less polished drawings in the *Taccuino senese*. These models could also have depicted the ground plan, view, and section of the octagon of Capua Vetere, which are in the center of U 2045A r. Since Antonio could hardly have been in Capua Vetere at the time, the reconstruction of the elevation, with its attic story and lantern, has to be ascribed to Giuliano. It is striking, however, that nowhere else there does Giuliano combine on one sheet, with the same consistency, the ground plan, elevation, and cross section of a single building, whereas this is precisely the organizational method developed later on by Antonio.

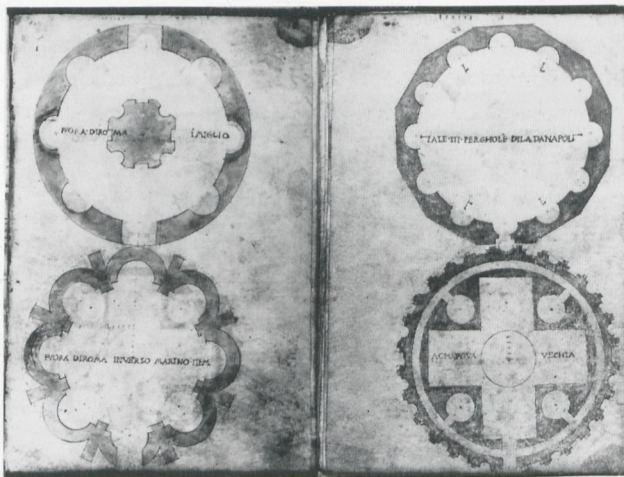
The two elevations on U 2045A r. follow the method of representing architecture that had been used since the fourteenth century: the elevations—in this case, a cross section or the front plane of the octagon—shown in orthogonal projection, with all of the components leading into depth shown in perspective.<sup>136</sup> This method of representation, which could be called “perspective elevation” and “perspective section,” had the advantage of combining a primarily architectural orthogonal drawing with a primarily pictorial perspective, making it intelligible even to the layman while at the same time conveying exact measurements and wall thicknesses.<sup>137</sup>

These literal copies of Giuliano's drawings from Antiquity could have been made by Antonio while he was still in Florence—that is, before the spring of 1504. The same can be said of \*U 1564A. The centering drawn on the recto derives from folio 27 r. of the *Taccuino senese* and conceivably includes the earliest specimens of Antonio's handwriting (see Fig. 7c); the roasting spit on the verso is technically much more detailed than that on folio 50 r. of the *Taccuino*.<sup>138</sup>

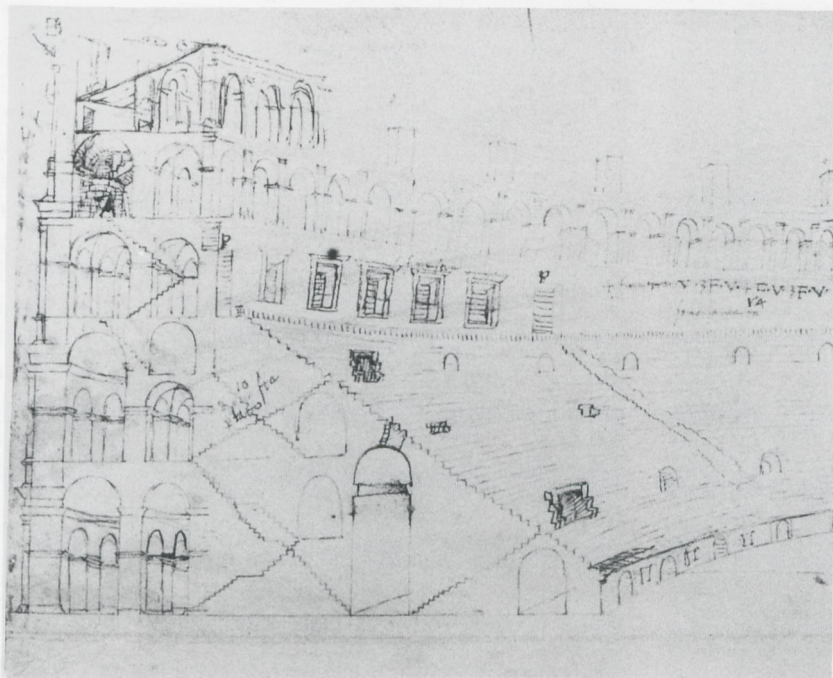
The speed with which Antonio subsequently outdistanced Giuliano is shown most of all by his com-



8 Antonio da Sangallo the Younger. Plans of antique centralized buildings (U 2045A v.; ca. 1503/4[?]).



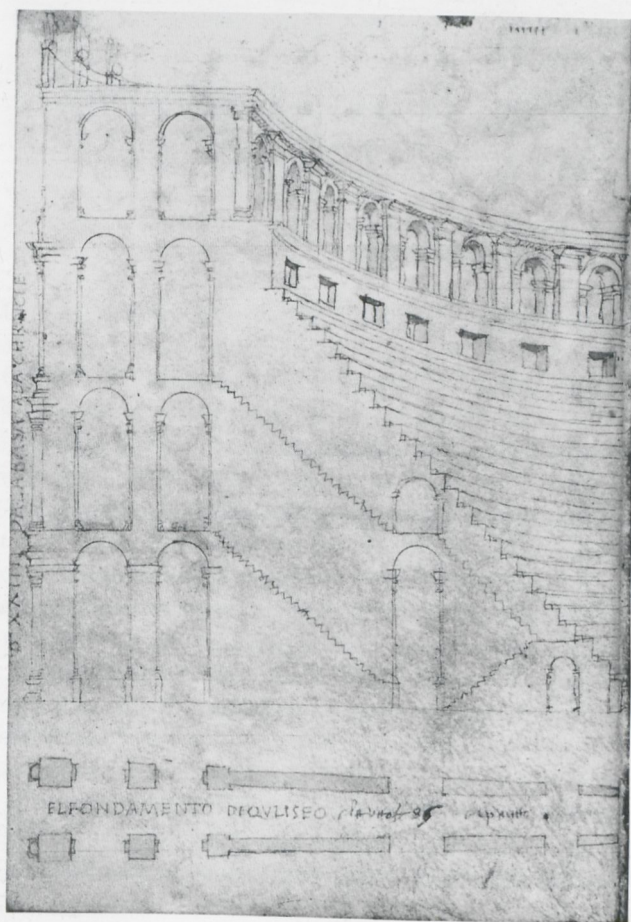
9 Giuliano da Sangallo. Plans of antique centralized buildings (Siena, Biblioteca Comunale, *Taccuino*, Codex S.IV.8, fol. 16 r. and v.), detail.

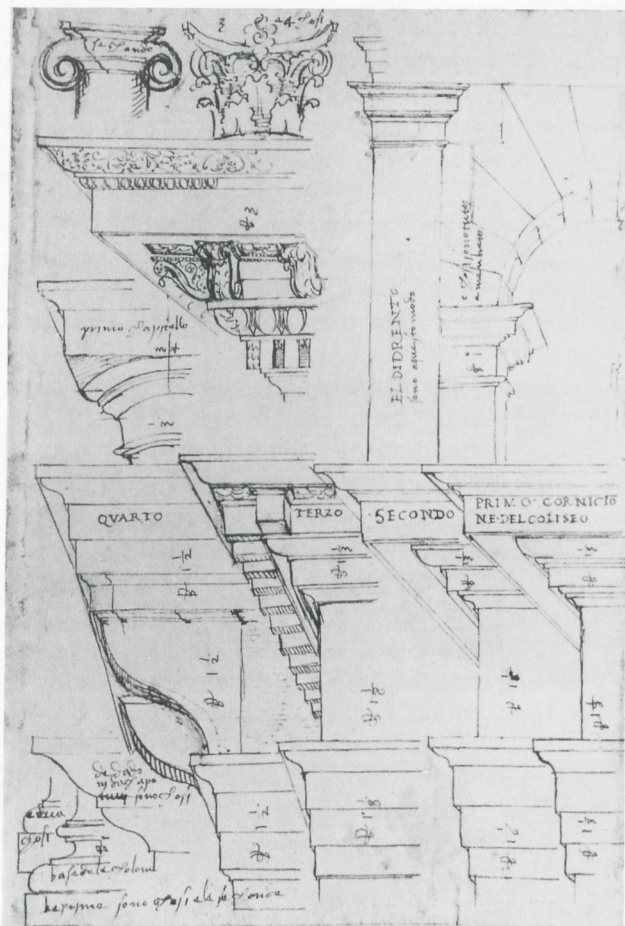


10 Antonio da Sangallo the Younger.  
Perspective section of the Colosseum  
(U 1555A v.; ca. 1504/5).

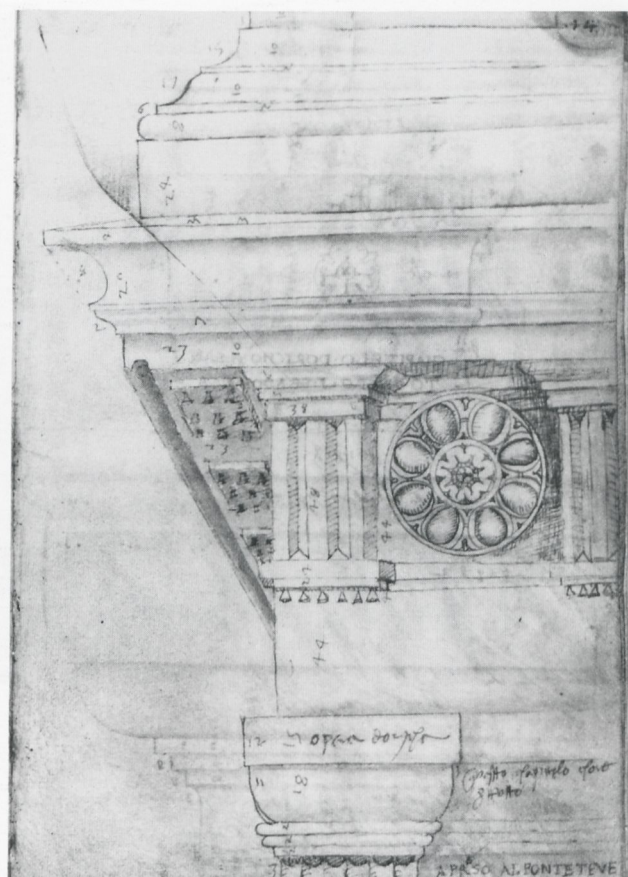
11 (below) Giuliano da Sangallo.  
Perspective section of the Colosseum  
(Siena, Biblioteca Comunale, *Taccuino*,  
Codex S.IV. 8, fol. 5 v.).

prehensive survey of the Colosseum, to which he devotes seven sheets of this early group.<sup>139</sup> Here, too, he appears to have started from the *Taccuino senese*, where, on folios 6 and 7, Giuliano with rare consistency combined a ground plan, cross section, elevation, and perspective view.<sup>140</sup> But Antonio was now no longer satisfied with copying. He studied the building *in situ* with such acuity and thoroughness that he was able to record the archaeological remains more precisely and intelligently than had any of the draftsman before him. Thus, on U 1555A r. he no longer shows the ground plan as a circle made slightly oval, as Giuliano does, but rather constructs an oval with two radii and four centers, placing the wall openings, piers, and stairs with much greater precision than did his uncle; similarly radical improvements are found in the cross section on U 1555A v. (Figs. 10, 11). While Giuliano crowds his overly tall cross section onto the sheet and is satisfied with a schematic characterization of the passageways, vaults, stairs, and auditorium, Antonio takes pains with every detail. He continues the complex system of stairs up to the top story and even reconstructs the illumination of the various corridors. One perceives that he has studied the building not only morphologically but also functionally and constructively, entirely in the spirit of Alberti. Not only does he reproduce the elevation on U 2043A r. with greater clarity than does Giuliano, but he also gives measurements of all the details. The sketches on





12 Antonio da Sangallo the Younger. Isometric view of details of the Colosseum (U 2043A v.).



13 Giuliano da Sangallo. Entablature of a Roman mausoleum (Siena, Biblioteca Comunale, *Taccuino*, Codex S.IV. 8, fol. 14 r.).

U 1576A r. and v., with their handwritten commentaries, prove that he worked all this out by himself, then transferred the results to clean drawings like U 2043A v., whose linear technique and partial perspective are again directly reminiscent of comparable sheets in Giuliano's *Taccuino* (Figs. 12, 13). This transferral may explain the lack of spontaneity that still characterizes, for example, his sketch of a passageway on U 1546A. There Antonio already exhibits a sureness, especially in his rendering of spatial structures, that goes even beyond Giuliano. In his diagram of the Colosseum stairs on U 1627A v. he shows himself again as a true architect who tried to penetrate into the ancient principles of spatial construction. On the same sheet, incidentally, he is already concerned with the Mausoleo del Divo Romolo,<sup>141</sup> the Basilica Aemilia, and a multinaved centralized building, and he sketches a head of Caesar there with a virtuosity

that can be explained only by a direct knowledge of the art of Leonardo.

The archaic handwriting, especially on U 1576A, speaks for Antonio's having begun his survey of the Colosseum soon after his arrival in Rome, that is, perhaps as early as 1504 (see Fig. 7d). Through Giuliano, he must already have come to know and admire Bramante; it may even have been Bramante who stimulated his interest in this analytical method. In any case, no earlier, comparably systematic survey of a large ancient building has yet been found, and thus it still served a decade later as point of departure for the sheets in the Codex Coner dedicated to the Colosseum.<sup>142</sup>

That Antonio da Sangallo, though remaining Giuliano's student and collaborator during his first years in Rome, was at the same time seeking a deeper and more comprehensive knowledge of Antiquity is shown

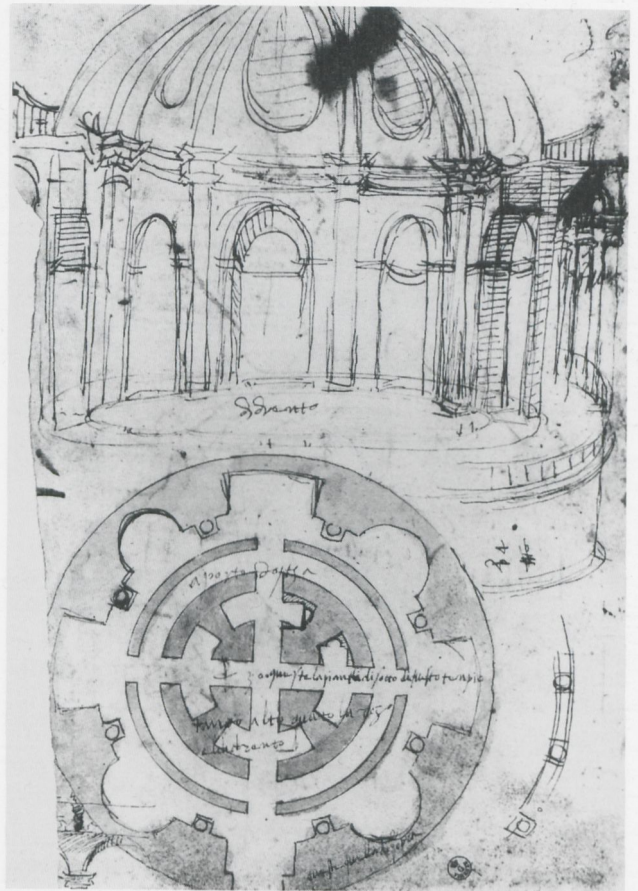


by other studies in his early group of drawings—for example, the ground plan and section of the Portumnus temple in Porto d’Ostia on U 1414A (Fig. 14), which manifest the same analytical sureness as the detail studies of the Colosseum on U 1546A.<sup>143</sup> The varying handwritings prove, as they do on U 2046A v.,<sup>144</sup> that Antonio returned to these early Roman studies in 1507/8, adding to the ground plan of the basement, the sketches on the verso, the measurements, and the colonnade, and even illustrating the last in detail in a partial elevation at the lower edge of the sheet.

Significantly, on U 2049A r., one of the few sheets with original designs in this early group of drawings, he used a largely orthogonal method of representation.<sup>144a</sup> At the left he sketched the tomb of a prelate that obviously goes back to prototypes from the Roman Quattrocento and shows no influence whatever from the great inventions of 1505, such as A. Sansovino’s tombs for prelates in S. Maria del Popolo and Michelangelo’s tomb for Julius II. The vocabulary of the triumphal arch at the right likewise still recalls Giuliano and especially the schematic ground plan with its subsequently applied column bases and perspectively foreshortened barrel vault. On the other hand, his treatment of the orders shows a monumentality rare at the time even for Giuliano. The free, sketchy lines—surprisingly sure for a twenty-year-old carpenter—which frequently circumscribe a form more than once, reveal Antonio’s graphic schooling in Filippino’s manner, especially in the figural and ornamental parts (see Fig. 4).

The verso of the same sheet confirms Antonio’s close connection with Giuliano da Sangallo and the Florentine tradition. The “porta del cardinale cienserjano,” probably from the palace of the younger cardinal, Giuliano, deceased in 1511, directly recalls the exterior portal of the Salone in the Cancelleria from shortly after 1500 (Fig. 15).<sup>145</sup> Antonio shows the portal at the right in orthogonal elevation and at the left in an isometrically extended section, with detail measurements in sixtieths (*minuti*) of a *braccio fiorentino*. No model for this combination of two views is yet found in the *Taccuino senese*, and it reveals once again the primarily structural thinking of the architect.

He may have drawn U 2046A r. a short time later.<sup>145a</sup> The handwriting, as well as the isometric representation of the coffers of the Basilica of Maxentius and of an entablature from the Forum of Augustus, show greater mastery than in U 2049A. In contrast, the centralized building on the recto, crowned by a Leonardesque rider, is again entirely in the spirit of

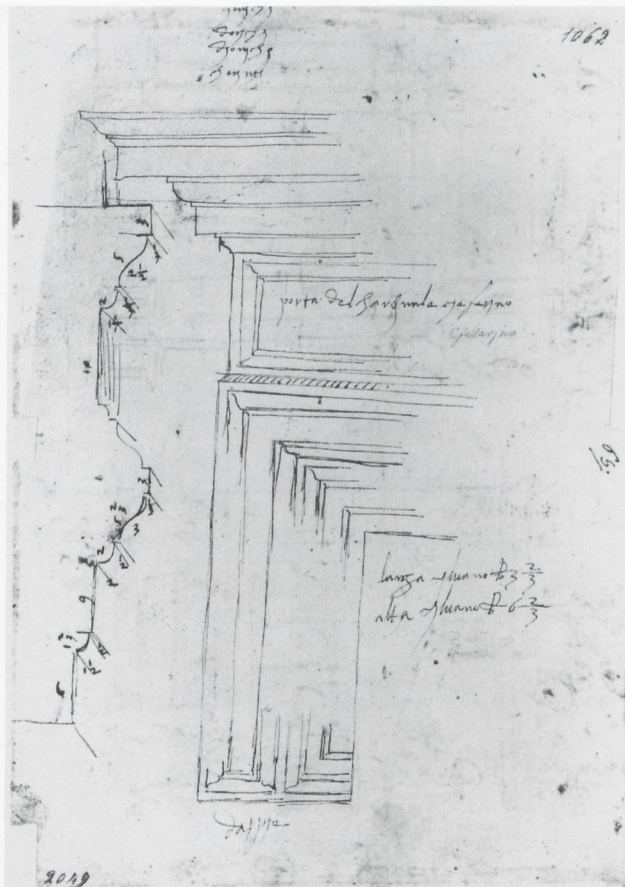


14 Antonio da Sangallo the Younger. Temple of Portumnus at Ostia Antica (U 1414A r.; ca. 1504/5).

Giuliano: The dome is reminiscent of Loreto, and the arrangement of the triumphal arch is inspired by the Cappella Gondi. That neither of these two sheets shows any reflection of Bramante’s first Roman buildings is a further, important argument for dating them in 1504/5.

The most mature sheet in this group, U 2047A, contains details of the Temple of Antoninus and Faustina on the recto and the shaft of a capital from SS. Cosma e Damiano on the verso. It reveals yet again that by 1505/6 Antonio had already developed his new isometry with a precision and mastery unsurpassed even by the Codex Coner eight years later.<sup>146</sup> The shape of the logogram for *braccio* and the 3 prove that Antonio added the measurements only after 1510.

Entablatures had already been represented orthogonally, perspectively, and isometrically before Giuliano,<sup>147</sup> and all three methods of representation are found in the *Taccuino senese*. But, as in his studies of the Colosseum, Antonio’s primary concern was a



15 Antonio da Sangallo the Younger. Elevation and isometric section of a portal of Palazzo Cesarini (U 2049A v.; ca. 1504/5).

maximum of reliable information. From the start he preferred an isometric representation of details to a perspectival one, if for no other reason than that it distorted less. Whereas he had still shown the detail of the Colosseum in isometric view, he now changed on U 2049A v. to an isometric section, which he would continue to prefer for details in the years following.

Neither Francesco di Giorgio nor Cronaca made cross sections of details, and in the *Taccuino* Giuliano also shows details in orthogonal, perspective, or isometric elevation, but hardly ever in cross section. Thus he may have added the only two exceptions (sections on folios 24 and 25 of the *Taccuino*) later, in the process strangely foreshortening the section rather than the view, as Antonio did.<sup>148</sup> His more precise drawing technique and measurements alone show that the more or less consistent perspectival sections of details in the *Libro* originate from a later date than Antonio's early studies.<sup>149</sup>

Of course, Antonio could have developed the isometric cross section himself, especially since sections of profiles must have been customary in building practice since the Gothic period. It is conceivable, however, that Bramante, who was a master of perspective, at least occasionally used it. Although the details of the few drawings attributed to him are exclusively orthogonal, the entablature in cross section in his Prevedari engraving of 1481 shows how familiar he was with this method of representation.<sup>150</sup> His friend Leonardo da Vinci had experimented with all kinds of sections, especially in his technical and anatomical detail studies.

That Bramante used isometric cross sections in the process of designing is suggested also by a number of copies presumably made by Aristotile da Sangallo, who was taught perspective by Bramante.<sup>151</sup> On U 1739A, Aristotile recorded a Doric entablature with exact measurements, probably in *palmi romani*, and the inscription "di bramante," a drawing that cannot be connected with any known building by the master (see Fig. 44).<sup>152</sup> It is thus apparently related to one of his unexecuted projects, perhaps for the courtyard of the Palazzo Apostolico in Loreto, for the model of which Antonio di Pellegrino was paid in February 1510.<sup>153</sup> The Doric entablature that Aristotile copied on U 1745A with the informative inscription "ritratta da disegni non so se misurata" is almost identical with that of the Cortile del Belvedere and may also go back to a design by Bramante.<sup>154</sup> It is unlikely that Aristotile would have translated orthogonal drawings by Bramante into isometric or perspectival drawings, if for no other reason than that Aristotile drew most of his details in orthogonal projection.<sup>155</sup>

By no later than 1505/6, Bramante himself must have perfected the purely orthogonal representation of details, which he used, for example, on U 104A v.<sup>156</sup> This method, too, was based on a long tradition and was already applied with astonishing consistency by such a master as Cronaca.<sup>157</sup> Giancristoforo Romano, the young Peruzzi, the young J. Sansovino, Menicantonio, and Raphael all made use of it, and Antonio was to prefer it increasingly after he entered Bramante's workshop.<sup>158</sup> Bramante seems to have done with the details what he did when he visualized parts of his project for St. Peter's on U 20A in perspective and, in 1509/10, had the pendentives drawn with technical precision in ground plan and cross section.<sup>159</sup> This is suggested as well by his large study for a Corinthian capital on U 6770A, where he supplemented the elevation partly in perspective on the recto with a purely technical section on the verso, intended for

the preparation of working drawings and wooden templates.<sup>160</sup>

Similarly, because of the handwriting and the subsequently applied wall articulation on U 2134A (see Fig. 2) and U 2162A—two related surveys of the ground plan of the Baths of Diocletian—the sheets can hardly be dated after 1506. They undoubtedly presuppose Bramante's measurement on U 104A r. (see Fig. 1).<sup>161</sup> In any case, Antonio used a scored grid here, as did Bramante on U 20A and 7945A, and in so doing improved on Bramante's survey by applying Bramante's own methods.<sup>162</sup> The precision with which Antonio proceeded is evident in the detail studies on these two sheets. At that time he may already have prepared a clean drawing of the ground plan as a whole, which then possibly served as a model for Bernardo della Volpaia, Francesco da Sangallo, and Giovan Francesco da Sangallo.<sup>163</sup> Now as before he used the Florentine *braccio*, not the *palmo romano* favored by Bramante, proving once again that he had not yet become one of Bramante's immediate collaborators. Unlike the *palm*, the *braccio* had the great advantage of almost exactly equaling two *piedi antichi*, thereby making whatever ancient modulus might have existed readily discernible.<sup>164</sup>

An even more obvious affinity to Bramante is revealed by the survey of the tomb of Theodoric on U 1563A (Figs. 16, 17).<sup>165</sup> Though the schematic ground plan on the verso still recalls Giuliano's studies of ancient centralized buildings, in his strictly orthogonal elevation Antonio takes a big step beyond Giuliano, who, probably at about the same time, drew the mausoleum on folios 37 v. and 38 r. of the *Libro* in a far more cursory style (Fig. 18).<sup>166</sup> In fact, this is the earliest surviving drawing anywhere showing not merely a facade but an entire building in strict orthogonal projection.

But is such a step conceivable from the same Antonio who shortly before had been working entirely in Giuliano's manner? The graphic style and numerals are reminiscent of Antonio's copies after Francesco di Giorgio on \*U 1482A, \*1483A, or the isometric cross section on U 1413A v., from 1507/8 (see Fig. 21).<sup>167</sup> The survey thus could have been made on the occasion of Julius II's trip to Bologna, between the arrival of the pope in Imola at the end of October 1506 and his departure from Bologna at the end of February 1507.<sup>168</sup> Since Bramante and Giuliano accompanied the pope,<sup>169</sup> we can assume that the young Antonio did likewise.<sup>169a</sup> In any case, a few months after the laying of the cornerstone of St. Peter's, Bramante must have been keenly interested in the Ravenna buildings,

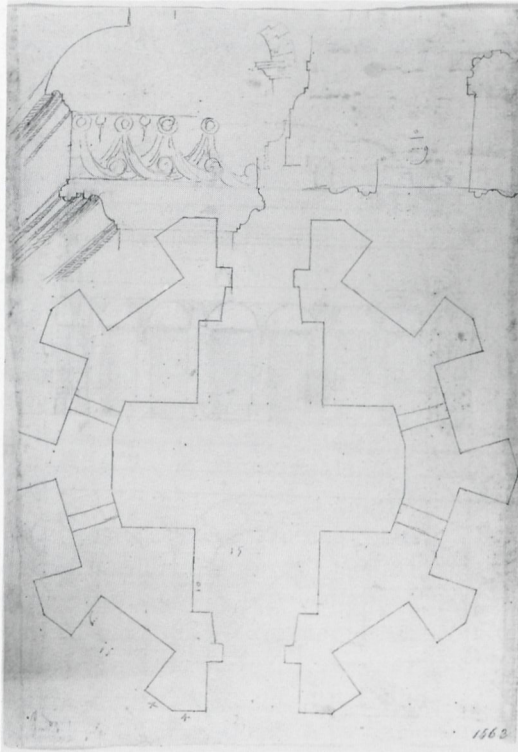
regardless of whether he undertook the survey himself or entrusted it to a helper who knew his methods.

A number of the sheet's characteristics speak against its being a totally independent survey by Antonio and in favor of its being a copy after Bramante. In contrast to all of Antonio's early drawings from Antiquity, it is measured in *palmi romani*, without a logogram to make this evident. Some of the numbers are accompanied by dots, as on Bramante's U 104A r. of about 1505 (see Fig. 1). Antonio seldom uses these, though significantly he does so on U 1413A v. of about the same time (see Fig. 21).<sup>170</sup> Finally, in the elevation Antonio twice changed a 3 to a 2, although he had previously drawn these parts correctly—perhaps because he had misread the numbers in an unfamiliar source.

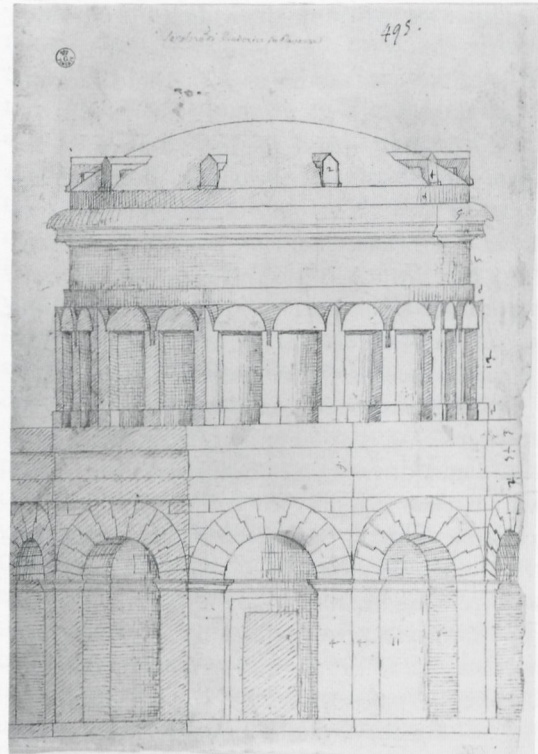
But it is the separation of the elevation and the ground plan and the restriction of the ground plan to the basement story that speak most strongly against an independent survey. The three main stories of this complex building could be projected exactly onto a surface only by means of their three corresponding ground plans, as Antonio so brilliantly demonstrated in his study of the same mausoleum on U 1406A from 1526 (Fig. 19).<sup>171</sup> The vertical extension of a ground plan into an elevation had been known since the Gothic period and is found occasionally before 1500 in the works of Antonio de' Vincenzi, Piero della Francesca, Francesco di Giorgio, Leonardo, and Cronaca.<sup>172</sup> Antonio himself had already used this method of drawing elevations on U 1414A r. (see Fig. 14). When, on U 124A, Bramante's assistant Antonio di Pellegrino drew a ground plan and cross section of the pendentives of St. Peter's to the same scale but, like Antonio, separated them on the recto and verso, he too must have been copying a source in which the section was drawn vertically from the ground plan.<sup>173</sup>

Bramante made use of this procedure not only in his late design for a dome—known through Serlio—where the ground plans of several levels are likewise related in scale to the elevation, but also in his preceding projects. Thus the combination of an elevation with two different ground plans drawn to the same scale, which is seen in the depiction of the porticus of the Cortile della Pigna in the Codex Coner, must also reflect Bramante's method of representation.<sup>174</sup> It is not coincidental that already about 1507/8 Antonio added the plan of the socle story on U 1414A r., and that this method was then developed primarily by Bramante's students (see Fig. 14).<sup>175</sup>

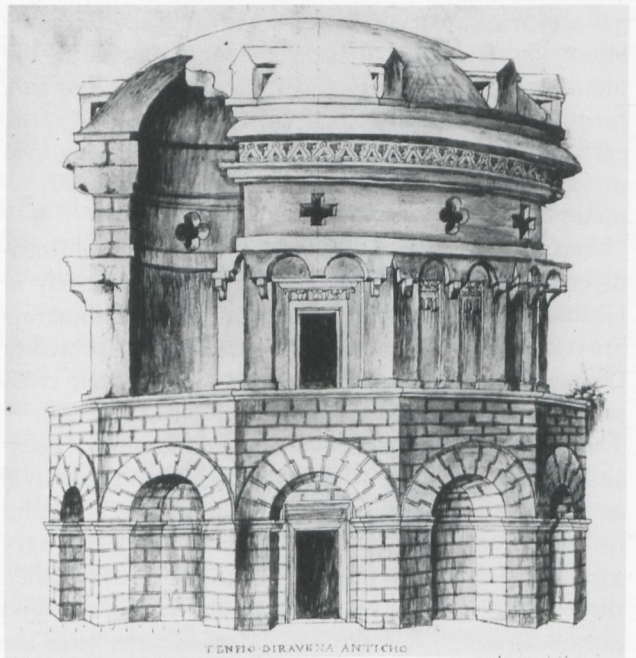
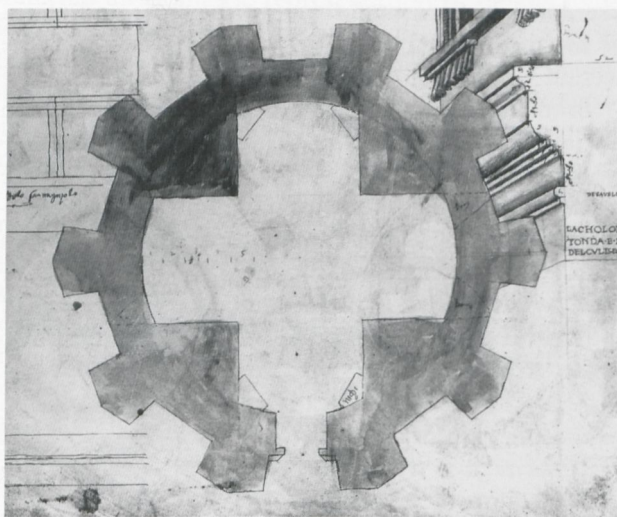
Outside Bramante's circle, the derivation of an elevation from a ground plan was handled much less



16 Antonio da Sangallo the Younger, after Bramante(?). Plan and details of the tomb of Theodoric at Ravenna (U 1563A v.; ca. 1506/7).



17 Antonio da Sangallo the Younger, after Bramante(?). Elevation of the tomb of Theodoric (U 1563A r.; ca. 1506/7).



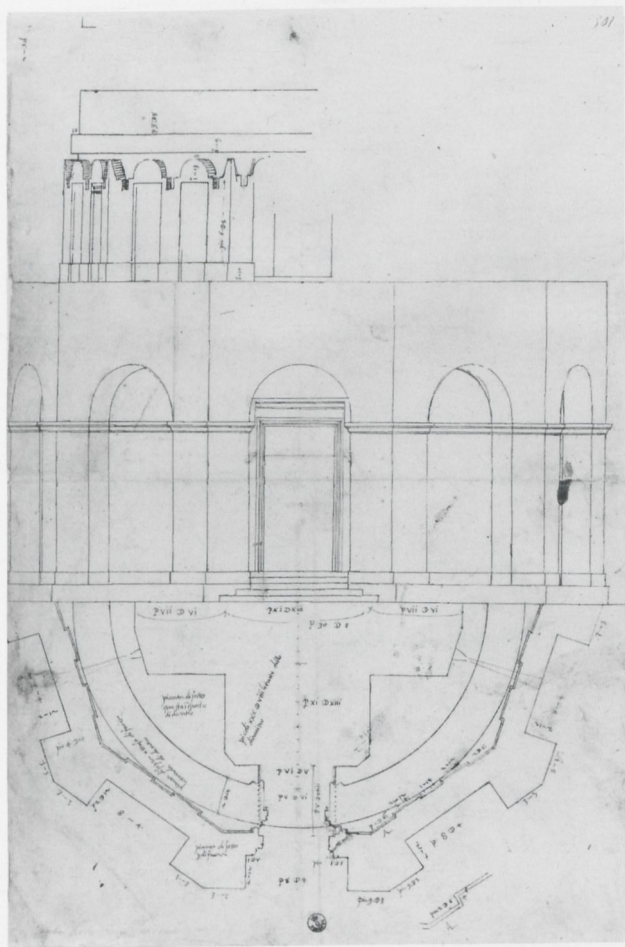
18 Giuliano da Sangallo. Plan and elevation of the tomb of Theodoric (Cod. Vat. Barb. lat. 4424, fols. 37 v., 38 r.).

consistently: for instance, in the Codex Strozzi, which shows an affinity to Cronaca; in the few examples in which Giuliano made a ground plan and elevation to the same scale;<sup>176</sup> and in the view of the Colosseum that the young Peruzzi, probably before 1504, extended vertically from the ground plan on U 8026A.<sup>177</sup>

Nevertheless, the elevation of Theodoric's tomb on U 1563A r. also profited from these partial perspective views (see Fig. 17). By again combining modeling, which had become increasingly realistic since the Trecento, with an orthogonal elevation, Antonio unified pictorial vividness with objectivity in a synthesis that was to be particularly important for the architecture of the High Renaissance.

Antonio, too, had previously drawn only flat facades, interior walls, and details in pure elevation — as on U 2049A r.—restricting himself more or less to abstract outlines. He had reserved crosshatched shading—which Bramante used so skillfully in designs like U 6770A r. (for the capital) or U 226A (for the centering of St. Peter's)<sup>178</sup>—primarily for figural elements and quick sketches like U 1414A r. (see Figs. 12, 14). Because both the elevation of the tomb of Theodoric on the recto and the isometric cross section of details on the verso show a much more awkward use of three-dimensional hatching than in his drawings of the following years, he can only at that time have become acquainted with this new method of representation.

In his representation of Theodoric's tomb, Giuliano was himself obviously coming to grips with new methods of representation (see Fig. 18). Whereas in the *Taccuino senese*, and still in his 1505 design for the papal musicians, he had used chiaroscuro relatively sparingly and created spatial depth mainly through linear perspective,<sup>179</sup> he now suggests depth mainly through light and shade—no differently from his designs for the facade of Loreto, which can be dated 1506/7.<sup>180</sup> If the drawing of Theodoric's tomb was also made shortly after the trip to Bologna in 1506/7, he could even have been under Bramante's direct influence. At any rate, his information goes beyond Antonio's study: A cross section of the building is shown on the left side, niches are recorded in the ground plan, the central window is indicated in the elevation, and he makes his own suggestion for reconstructing the frieze zone. He could have learned the combination of cross section and elevation from Bramante, who combined the two in his project for the dome.<sup>181</sup> In Giuliano's work, however, it occurs only in the illustrations immediately preceding the fourth fascicle of the *Libro*. This combination of interior and exterior views also goes back to the Gothic period; it may have



19 Antonio da Sangallo the Younger. Plan and elevation of the tomb of Theodoric (U 1406A r.; ca. 1526).

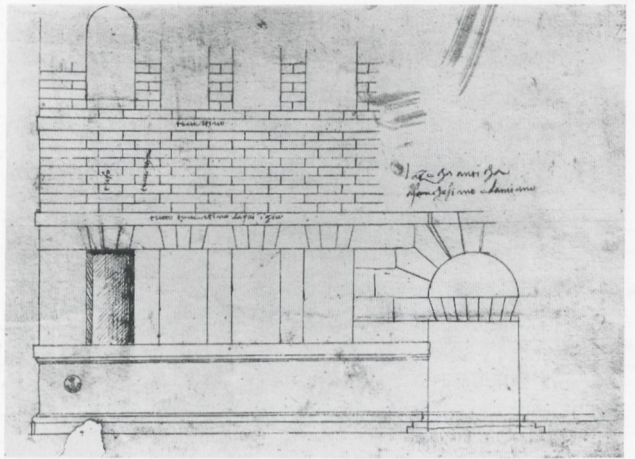
been introduced in Rome by Bramante, and would later be developed by his students. All of this confirms once again the surprising importance of Gothic methods of representation, particularly for Bramante and his circle.

The sharp break that this first intense examination of Bramante's work must have occasioned in the totality of Antonio da Sangallo's thought found new expression in his drawings of the following years. The handwriting in some copies after Francesco di Giorgio's *Codex Magliabechiano* II. I. 141 shows the connection between his early group of drawings and those securely dated in 1508/9.<sup>182</sup> Although the *ch* and *z* are still reminiscent of the script of his early years, the *d*—and above all the character of his script in general—is already markedly closer to Antonio's later handwriting (see Fig. 7e–l). Francesco di Giorgio's machines may have been useful for the increasingly intense building activity under Julius II, but Antonio was not at all satisfied with making mere copies. He improved the mechanisms, intensified the *chiaroscuro* through hatching (which already looks more routinized than in the elevation of Theodoric's tomb), and on \*U 1482A he even added a skillfully sketched figure.

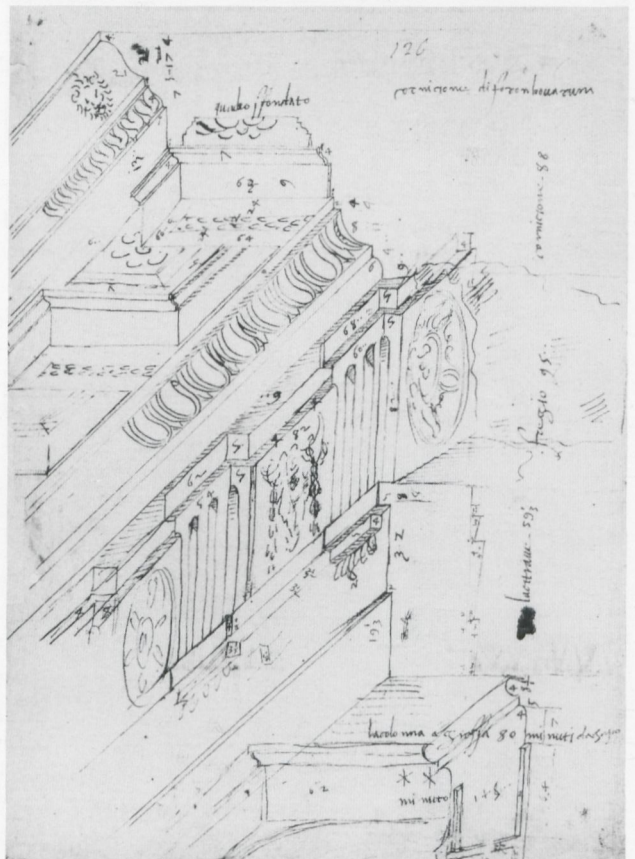
A similar script and hatching reappear on some of his drawings from Antiquity, such as the largely orthogonal elevation of the “*zecha antica a san chosimo e damiano*” on U 992A (Fig. 20), the sketches of the *Volta Dorata* on U 1273A (see Fig. 7i), the later corrections on U 1414A (see Fig. 14), and the masterly isometry of the entablature of the *Basilica Aemilia* on U 1413A v. (Fig. 21), which more than any other drawing anticipates the entablatures in the *Codex Coner*.<sup>183</sup> After 1510, when he had gone over to Bramante, Antonio added the base and capital and a purely orthogonal view of the architrave and frieze on the recto.<sup>184</sup>

A date of 1508 for U 1413A v. likewise is suggested by the closeness of the script and method of representation to Antonio's designs for the fireplace in the *Sala di Costantino* (see Fig. 5) and the coffered ceilings on U 1623A, 1646A, and 2153A, where he already handles *chiaroscuro* with the same mastery as in his mature studies.<sup>185</sup> Not without reason did Vasari include U 1623A r. in his *Libro*.<sup>186</sup>

The sketch of the ground plan of the *Rocca of Civitavecchia* on \*U 975A could have been made at the very end of his collaboration with Giuliano. In any case, a date prior to the beginning of its construction in April 1509 is confirmed not only by the totally different ground plan, but also by the antiquated *ch* (see Fig. 7j). He had already outgrown this when, around



20 Antonio da Sangallo the Younger. Elevation of the “*zecha antica*” (Forum of Vespasianus), (U 992A r.; ca. 1507/8).



21 Antonio da Sangallo the Younger. Isometric view of the entablature of the *Basilica Aemilia* (U 1413A v.; ca. 1507/8).

1510, he made sketches, among other details, for the centering of a coffered vault (\*U 1484A v.; see Fig. 7k).<sup>187</sup>

When Giuliano returned to Florence in the spring of 1509, there was no longer any obstacle to Antonio's transfer to Bramante's studio. Bramante at first placed at his side his old, experienced assistant, Antonio di Pellegrino. Together with him Antonio began, in the winter of 1509/10, to oversee the construction of the centering for the arches of St. Peter's.<sup>188</sup> Antonio di Pellegrino apparently died sometime between November 1510 and March 1511, and Antonio became Bramante's chief collaborator.<sup>189</sup> Vasari, informed by his friend Aristotile, reports that Bramante suffered from gout during these last years of his life and increasingly left the drawing of his projects to Antonio:

. . . dal perletico impedito le mani, non poteva come prima operare; a porgergli aiuto ne' disegni, che si facevano: dove Antonio tanto nettamente, et con pulitezza conduceva; che Bramante trovandogli di parità misuratamente corrispondenti, fu sforzato lasciargli la cura d'infinite fatiche, che egli haveva a condurre, dandogli Bramante l'ordine, che voleva; et tutte le invenzioni, et componimenti, che per ogni opera s'havevano a fare. Nelle quali con tanto giudizio, espedizione et diligenza si trovò servito da Antonio, che l'anno MDXII. Bramante gli diede la cura del corridore, che andava a' fossi di Castel Santo Agnolo. . .<sup>190</sup>

Antonio accordingly had to translate Bramante's ideas in drawing. Thus, at least the projects of 1511–13 are probably from his hand.

Bramante's bequest probably went to Raphael and was lost together with the latter's architectural drawings.<sup>191</sup> This may be the reason why so few sketches by Antonio from these decisive years have survived. Their dating in the last years of Bramante's life again is based primarily on characteristics of the handwriting, especially on changes in the 3, since the projects themselves rarely justify limitation to 1511–13.

Antonio's exact measurement of the choir arm of St. Peter's on U 43A was probably made then—that is, after the completion of the walls, but before the start of the vaulting, which Bramante himself carried out around 1512/13.<sup>192</sup> The alternative, on the recto, to the executed choir arms, in which the double pilasters of the apse are replaced by single pilasters, may have been copied from or inspired by Bramante's wooden model of April 1506, a model that is documented only by a later collaborator of Sangallo's on U 4A v. and U 5A r.<sup>192a</sup> The ground plan design on U 1304A, which is

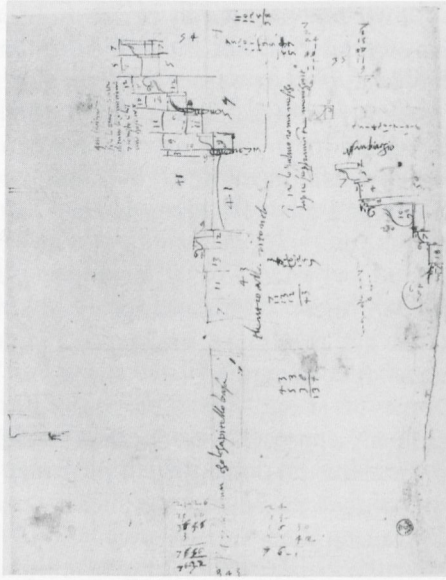
so obviously inspired by Bramante's choir and which was intended, if not for S. Biagio, then for a similar building, may date from the same time.<sup>193</sup>

After 1510—that is, after he changed the loop in his logogram for *braccio* but certainly before 1513, Antonio sketched the dome of the Pantheon on the recto of U 69A and the scaffolding for the vaulting of the apse of St. Peter's on the verso.<sup>194</sup> The Pantheon sketch undoubtedly served as a preparatory drawing for the dome project. It thus reappears in abbreviated form on U 85A in Giovan Francesco's hand, beside three alternative suggestions for the dome by Antonio.<sup>195</sup> None of these "Tre modi per santo petro" even remotely approaches the lavishness of Bramante's final project for the dome, which probably already reflects the spirit of the Medici pontificate—another argument for dating them immediately prior.<sup>196</sup> Only the first alternative includes a ring of columns around the drum; the second merely has pilasters; and in the third, the one closest to the Pantheon, the drum is missing altogether. Obviously, under Julius II Bramante and his technically experienced assistant took greater account of the load-bearing capacity of the piers.

The way the ideas of the handicapped Bramante were translated into graphic form is perceived even more immediately on U 1191A (Fig. 22).<sup>197</sup> At the left, Antonio copied the interior entablature of the Pantheon from an elevation made by Bramante's chief stonemason, Menicantonio (" . . . la prese per bramante menicantonio") and derived from it, at the right, an idea, never executed, for the interior entablature of S. Biagio. Apparently Bramante directly followed the admired model—just as in the case of the capitals and the cupola of St. Peter's—and assigned his collaborator the task of calculation and measured conversion of these details, a problem that he was able to communicate to him verbally, without making his own sketches.

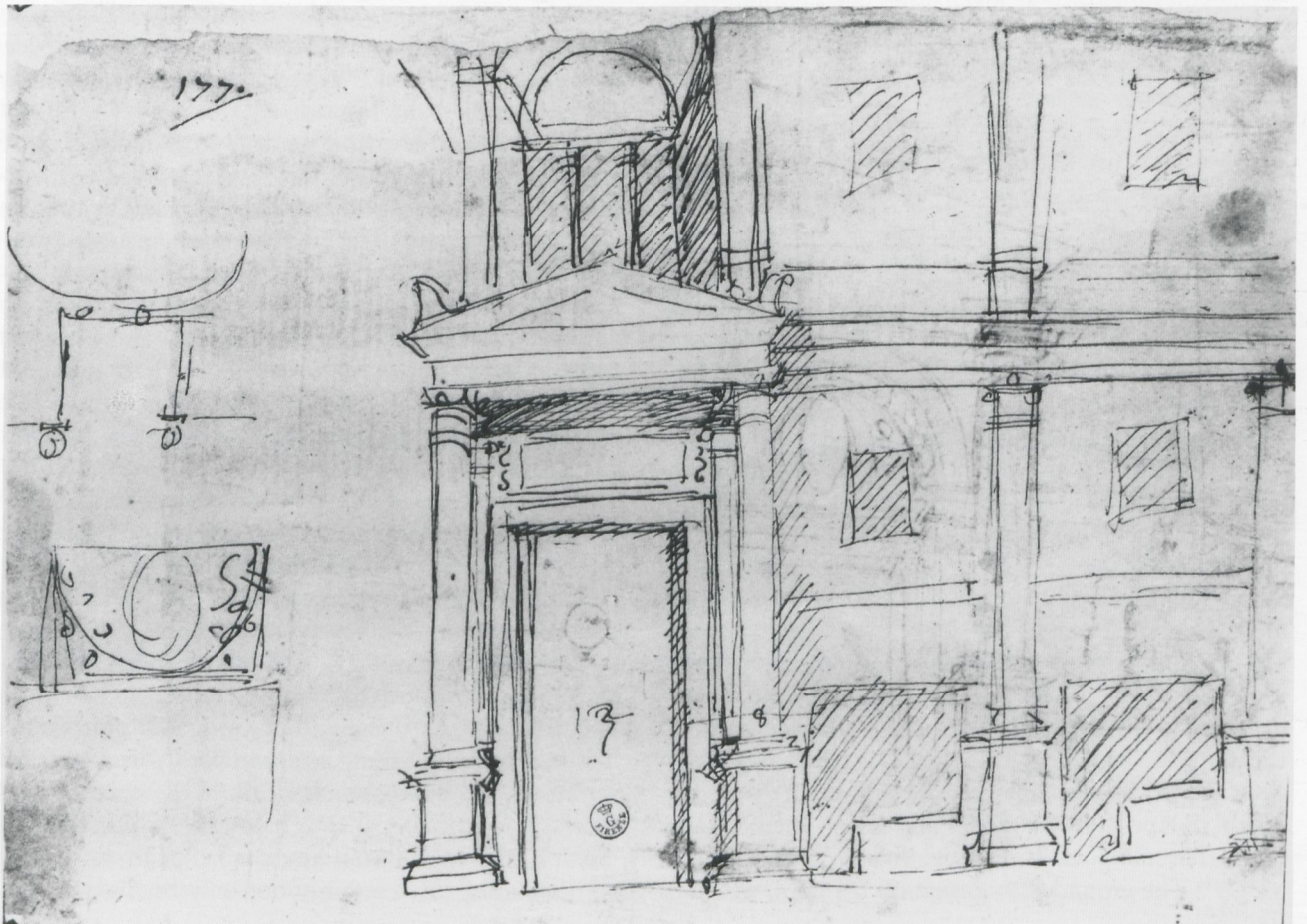
The two elevation sketches for the portal zone of SS. Celso e Giuliano on U 1859A belong to the same period (Fig. 23).<sup>198</sup> In the more routinized and energetic chiaroscuro hatching of the portal, Bramante's lessons are even more clearly recognizable than before.

Antonio's studies on \*U 977A for a portal, the *maschio*, and the tombs of Civita Castellana must have been made toward the end of Julius II's pontificate. The handwriting, at any rate, can hardly be reconciled with that of 1506–9, when work on the uncompleted Rocca was probably already resumed.<sup>199</sup> Nevertheless, when he drew the portal he remained true to the style of his uncles, and certainly not only because of Bra-



22 Antonio da Sangallo the Younger. Interior entablatures of the Pantheon and S. Biagio (U 1191A r.; ca. 1510).

23 (below) Antonio da Sangallo the Younger. Sketch for the facade of SS. Celso e Giuliano (U 1859A r.; ca. 1510–13).



mante's instructions. In his first independent buildings, such as the palace of Tommaso Inghirami, the modernization of the Castel Sant'Angelo and the Rocca di Capodimonte, and the castle of Veiano, which he probably began during the reign of Julius II, he shows himself to be a true Sangallo, as if he valued this identity and wished to avoid being mistaken for an epigone of Bramante.<sup>200</sup>

Still, Bramante must have freed him in many respects from Giuliano's Quattrocentese limitations. In his few datable drawings of Antiquity from 1509–13, he broke away from Giuliano's traditional schemes of representation. Thus on U 575A and 1168A, he encompassed a single building from several different angles, and reconstructed a portal in several variants—with incomparably greater looseness, sureness, and competence than in the sketches from his first years in Rome (Fig. 24). How intensively he worked to achieve a precise understanding of those very monuments that were important for Bramante's late style is demonstrated further by his sketches of the Arch of Titus on U 1255A.<sup>201</sup>





Vasari does not state whether Antonio the Younger remained true to Bramante until the latter's death or whether, as his numerous personal commissions seem to suggest, he made himself independent at the start of the new pontificate. If the latter, his role as draftsman under Bramante could have been taken over by his cousin Giovan Francesco from the spring of 1513 on. Giovan Francesco, as his sketches on U 85A show, had been active in the building lodge of St. Peter's for some years, and, as Vasari again reports, he was working closely with Giuliano Leno.<sup>202</sup> He then served Raphael in a similar capacity, and it is conceivable that Giovan Francesco, rather than Antonio, drew Bramante's last designs, that is, not only for the dome but also for the altar house, the entire project for the expansion of St. Peter's, and for the Casa Santa in Loreto.

*Antonio's Early Maturity: From the Death of Julius II to the Sack of Rome*

Leo X (1513–21) immediately gave a new direction to the art and building policy of Rome and initially entrusted the realization of his lofty aims mainly to Bramante, Raphael, and the Sangalli—Giuliano and Antonio the Younger. While Julius II had concentrated on a few buildings commensurate with the new imperial pretensions of the papacy, the Medici pope and his advisers sought the renewal of ancient Rome in its entirety.<sup>203</sup> And while Julius II was still following the tendencies of his predecessors when he cut axial lanes through the city, such as the Via Giulia and the Via della Lungara, and gave them new points of emphasis, like the Palazzo dei Tribunali, now the attempt was made to revive the streets and urban focal points of ancient Rome by means of classicizing buildings. Thus, only a few months after Leo's election, Giuliano proposed a project that would extend the old Medici residence up to the Piazza Navona after the model of the imperial palace at Constantinople; and it was probably also Giuliano who designed even the wooden theater for the Capitoline, in which the two nephews of the pope were made citizens of Rome.<sup>204</sup> At the same time, or soon afterward, Antonio began the palaces of the Baldassini, Farnese, and del Monte, likewise within the context of the ancient cityscape, and in these, as in a project of his own for the Medici palace, he went considerably beyond Giuliano's reconstructions of ancient houses.<sup>205</sup>

Only by following the course of the ancient streets could the destruction of ancient monuments, such as the Meta of the Borgo, be avoided;<sup>206</sup> indeed, they could be given a new significance within the frame-

work of the city. It was not without reason that the most important piece of urban planning by Leo X from about 1516/17 was the restoration of the two ancient streets radiating from the Piazza del Popolo.<sup>207</sup> Antonio had just then been appointed as second papal architect, giving him direct influence over the shaping of the city.<sup>208</sup> Raphael and Antonio considered not only distinguishing the accompanying Piazza del Popolo with an ancient obelisk, rescuing the ancient mausoleum at the junction of the two streets, and making the exedra of the Horti Aciliorum the focal point of a side street, but also architecturally articulating the crossing point with another street of ancient origin at the Piazza Nicosia.

The same principles determined thinking about the construction of new villas and churches: the orientation of the Villa Madama toward the Ponte Milvio; the erection of the Villa Lante for Baldassarre Turini on the foundations of the putative villa of Martial; Antonio's wish to transform part of the imperial fora into a villa; or his thought of reconstructing Santa Croce after the Templum Etruscum and building S. Giovanni dei Fiorentini after the Pantheon.<sup>209</sup>

This new Leonine building policy was so deliberate and steady that it must have emanated directly from the papal court and can hardly be connected merely with the name of one or even several artists. It led the pope consequently to commission Raphael to survey systematically and reconstruct not only the monuments of ancient Rome but also its streets, gates, and walls—"ad aeternam urbem in pristinam maiestatem reparandam," as Calcagnini defined the objective of the project in 1519/20.<sup>210</sup>

An equally ambitious, though less comprehensive antecedent to Raphael's project existed already at the beginning of Leo's pontificate. It has been transmitted to us in the form of the Codex Coner and was probably also commissioned by Leo X in 1513/14.<sup>211</sup> The new rulers were unable to form a conception of ancient Rome from such unillustrated topographies as those of Flavio Biondo and Francesco Albertini, or from the editions of Vitruvius. And even the architects in charge may have found it difficult to retain an overview of the scattered and heterogeneous studies of Antiquity from the preceding years. Both sides must thus have been in agreement in their desire to bring these and further studies together in a systematic collective work and, if the occasion should arise, to make this accessible in print to a larger circle. Who among the artists gave the initial impetus and how the project came into being are so far unknown. It is certain, however, that Bramante, Giuliano, Antonio, and Gio-

van Francesco made their drawings available, and that Antonio, at least, contributed with advice and corrections.<sup>212</sup> Even though the draftsman of the Codex, Bernardo della Volpaia, was a Florentine and could have come from Giuliano's school, Giuliano hardly was the real instigator of the project. Otherwise it would be a mystery why Bramante is represented by so many buildings but Giuliano by two ground plans at most,<sup>213</sup> and why Bernardo would have taken over several drawings by Antonio and identified them by name but neglected to attribute the few copies he made from Giuliano.<sup>214</sup> Like the learned inscriptions, the preference for a perspectival or partially perspectival method of representation indicates that the Codex was intended for a circle of humanistically educated laymen, not that it was a *retardataire* method of working. It was precisely when he showed entire monuments, at any rate, that Bernardo tried to achieve a much more consistent and clear perspective than did Giuliano or the early Antonio. The measured elevation of the Cortile del Belvedere on folio 45, for instance, is redrawn on folio 43 in a semiperspectival "orthographia." Since he could have entered the missing measurements of depth even more clearly in the cross section on folio 46, he must have been concerned primarily with the spatial and plastic effects of the facade.<sup>215</sup> This effort not to neglect the clarity of his monuments at the expense of precise information is also demonstrated by Bernardo's numerous studies of the Colosseum and Pantheon.

Antonio and Giuliano would scarcely have found time for such an undertaking during this period of intense activity in building and planning. The choice thus fell to Bernardo, who already before this must have attracted attention as a careful draftsman and experienced recorder of antiquities. That Antonio played an important role from the beginning in the formation of the work is shown by the system of measurement employed, the *braccio fiorentino* divided into sixty *minuti*. But it is established above all by his correction of the entablature of the temple of the Dioscuri on U 1181A.<sup>216</sup> There, as in many of his surveys of entire buildings, and like Giuliano in the *Libro*, Bernardo still makes the orthogonals converge, whereas later, on folio 85 of the Codex Coner, he takes over not only Antonio's corrections but also his isometric method of representation. Antonio's correction was based on a survey by his brother Giovanni Battista, who probably did not come to Rome until the spring of 1513,<sup>217</sup> and since Bernardo drew most of the details isometrically, he could not have begun to make clean drawings for the Codex before 1513.

Similar corrections by Antonio, not only with respect to the architectural fabric but also to the method of representation, may be hidden in other sheets of the Codex Coner.

Bernardo used models by Antonio not only for those examples he specifically attributed, such as the Doric entablature on folio 82, which was discovered under St. Peter's in 1507 and then reburied, but for his drawings of the Colosseum, the Baths of Diocletian, and the Pantheon.<sup>218</sup> In the case of the Pantheon, this is proved by the very measurements, which correspond to those on U 85A and 69A r.<sup>219</sup> For his drawing on folio 136, Bernardo went back to Giovan Francesco da Sangallo's independent measurement of a base of the Septizonium on U 1324A—"Basa delle cholonne per me di sette in soli."<sup>220</sup> And his Doric entablature from the Theater of Marcellus (fol. 76) may be based on Giovan Francesco's drawing on U 1705A, even though the measurements do not correspond exactly.<sup>221</sup> In other cases, too, Bernardo seems to have looked over and developed available drawings.

All of this, as well as the authority still accorded the Codex by Michelangelo and Palladio, speaks for its having been more than just the ambitious undertaking of a talented individual. It suggests that the assistance of so many important masters was dedicated to a higher cause. Despite all the inconsistencies and awkwardnesses in the book, even Bramante may have played a part in its conception. Bramante had instructed Aristotile and Labacco in architectural perspective, and this certainly included the bird's-eye view often used by Bernardo, which Bramante had seen in Leonardo's work and made use of for a coin depicting the Cortile del Belvedere.<sup>222</sup> Besides, Bramante's joint responsibility included the participation of his assistants, while Antonio's involvement in the perspective representations must have been minimal. In any case, it is hardly a coincidence that Bernardo interrupted the project soon after Bramante's death, and that he included the project for SS. Celso e Giuliano but not Raphael's Chigi Chapel or Antonio da Sangallo's first palaces. Indeed, the new project for Rome, to which Raphael turned his attention toward 1519, was to concentrate even more concretely on the reconstruction of the ancient city.<sup>223</sup>

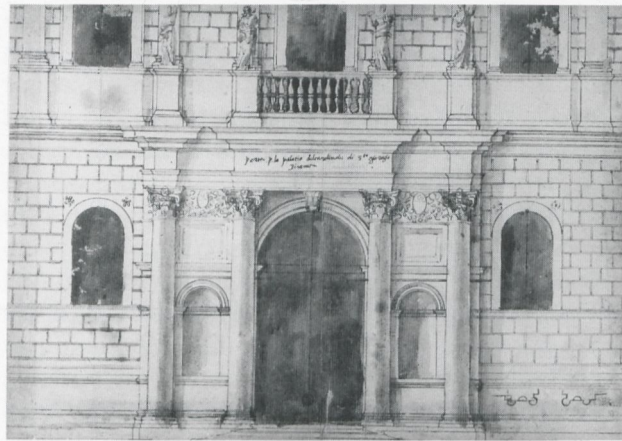
The high standard achieved in clean architectural drawings in Bramante's circle is demonstrated by Antonio's first fully independent designs. No other architect profited as much from the desire for building that spread throughout Rome after the death of Julius II. He quickly rose in status from carpenter and

master builder to one of the most celebrated architects in Italy, courted not only by the Medici, Farnese, Riario, del Monte, Colonna, and Santa Croce, but also by the building lodges of Orvieto and Foligno.<sup>224</sup> Even before the election of Leo X he may have received occasional commissions, such as the palaces of Fedra Inghirami and Cardinal Fieschi and the *rocche* of Capodimonte and Veiano, which are more archaic in appearance than the buildings begun after 1513/14.<sup>225</sup>

On the basis of its archaic 3, Antonio's ground plan on U 1298A for the Palazzo Baldassini can be accepted as his earliest surviving independent project for a building, datable to no later than 1513, if not to the year before.<sup>226</sup> Like all his Roman projects, it is measured in *palmi romani*. As in the Palazzo Ricci-Inghirami and the Rocca of Capodimonte, he retains a pre-Bramantesque vocabulary, for example, in his choice of columnar arcades for the courtyard. His four years of instruction under Bramante, on the other hand, are reflected in the strict axial symmetry he imposes on the irregular building site. The two main axes cross at the center of the square courtyard, and the *andito*, courtyard loggia, rear exit, and stairs follow a tightly controlled movement.

How a related facade elevation might have looked can be seen in the slightly later presentation drawings for the portal of the Cancelleria on U 188A (Fig. 25) and for the Palazzo Farnese in Gradoli on U 1320A, where perspectival aids, such as those still offered by Giuliano in his contemporaneous project for the Torre Borgia on U 134A, have largely been eliminated.<sup>227</sup>

That orthogonal cross sections were then already a firmly established component of planning is demonstrated by Antonio's section for the Palazzo Farnese on U 627A, certainly the earliest among the numerous designs made by the young master for this, his most important work, and probably dating from 1513/14 (Fig. 26).<sup>228</sup> One immediately senses there the sure hand of a practiced designer fully in command of the techniques of orthogonal projection. Taking the format of the sheet into account, Antonio truncates the frontal and receding loggia in the middle, shades the cross-sectioned arcades and vaults with short, Bramantesque hatchings, and in so doing gains space on the right border to indicate the correspondence to the exterior articulation of the building. Not until executing the drawing and perhaps after having discussed it with the cardinal had he decided to offer a more monumental alternative for both upper courtyard stories. The sheet in its entirety may thus be interpreted as a presentation drawing for the cardinal.

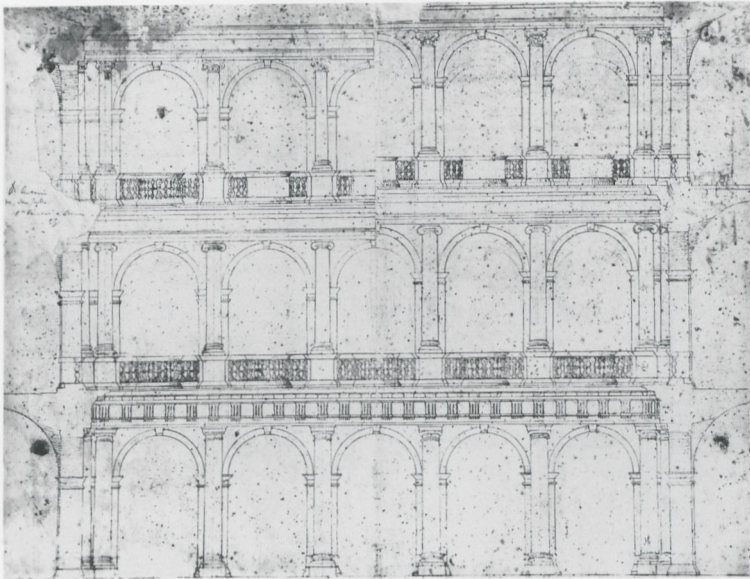


25 Antonio da Sangallo the Younger. Cancelleria, project for the portal (U 188A r.).

Not until a slightly later time did he turn to working out the three-naved "atrium" and its connection with the courtyard, for which he elaborates several proposals on U 1000A r., following Vitruvian rules and so precisely and extensively labeled that he seems to have wanted to be able to hand on the sheet to the cardinal for a joint consultation.<sup>229</sup> No previous architect had laid a similar value on the horizontal continuity between the individual building elements, and thus it is no coincidence that the section, which illuminates these continuities, has such a particular importance for Antonio. As in the design for the portal cornice for the Palazzo Baldassini on 1000A v., his search for antique perfection finds resolution in the monuments of the imperial period (U 1221A v.).<sup>230</sup>

When Antonio has to deal with the elevation relief, such as the semicircular balconies on U 627A or the window aedicules of U 1000A r. and 1001A r., he makes use of the proven Bramantesque chiaroscuro hatchings and occasionally even light suggestions of perspective. On U 1199A he calculates the Doric frieze of the courtyard order in *minuti*, that is, in the sixtieth part of the Roman *palm*. Antonio must have become acquainted with calculations of this sort and with theoretical drawings under Bramante, who was the first to have reconstructed the Doric entablature precisely and made it, in various forms, an integral part of the architectural vocabulary.<sup>231</sup>

Finally, the detail plan for the stairway on U 1002A has survived, which he planned with greater care than was usually taken with stairs up to that time. The primarily technical character of the drawing, the notation of the angle of inclination of the runners, the

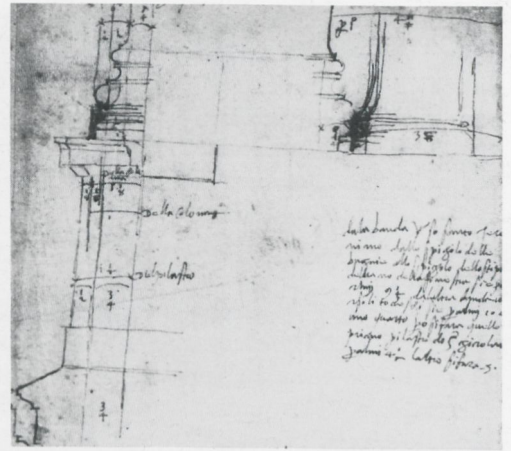


26 Antonio da Sangallo the Younger. First project for Palazzo Farnese, section (U 627A r.; ca. 1514).

scaling, and the detailed commentary remotely recall Antonio di Pellegrino's drawing U 124A for the pendentives of St. Peter's<sup>232</sup> and assume similarly complex calculations; here, too, we are dealing with another aspect of the Bramante school.

Once again, the progression of Antonio's handwriting indicates that this first stage of planning for the Palazzo Farnese must have extended over several years—at least from about 1513 until 1515, if not, indeed, beyond that. Thus the study on U 918A for the base zone of the *piano nobile*, with its Colossal order, probably was not drawn until 1516–20, when construction had already reached this level (Fig. 27).<sup>233</sup>

The various stages in this first planning phase of the Palazzo Farnese can be recognized in some less easily datable drawings of the same years. Thus the sketches on U 1259A for the Palazzo Medici on Piazza Navona and on U 895A for the Palazzo Fieschi correspond to the stage reached in 1513/14.<sup>234</sup> The elevation of the Torre del Monte on U 1898A is reminiscent, down to the fine hatching, of U 627A.<sup>235</sup> Conversely, a date of 1513/14 for a detail of the Doric order of the Palazzo Farnese on U 1199A is supported by the relationship of the handwriting to Antonio's correction of Bernardo della Volpaia on U 1181A. The design on U 1050A for the Bramantesque church of S. Egidio in Cellere, if Antonio's script there is not misleading, can hardly be dated before 1513/14.<sup>236</sup> Its design procedure is already remarkably similar to that of the project on U 171A for S. Maria di Monserrato of 1517/18.<sup>237</sup> Still, it



27 Antonio da Sangallo the Younger. Project for the Colossal order of Palazzo Farnese (U 918A r.; before 1520[?]), detail.

is just such projects as these that testify to the difficulty of determining a date merely by stylistic criteria.

More completely preserved are the designs for St. Peter's that Antonio prepared after he was named Raphael's deputy and collaborator in the direction of the St. Peter's office in the fall of 1516.<sup>238</sup> Raphael had already presented his own alternative project around 1514 and in the only surviving preparatory study, U 1973F, had proved himself the genuine heir of Bramante.<sup>239</sup> There he is concerned, just as Bramante had been in U 20A and 7945A, to elucidate spatially the effect of the interior, in this case the view in spatial terms from the central nave into the side aisles and the adjoining chapels. How much more directly Raphael had made Bramante's method his own than the latter's long-standing assistant had done is also shown by the remaining designs from these first years of Raphael's activity as an architect: the sketches for a kind of nymphaeum on the Lille study for the Madonna Alba from around 1511/12, where plan and elevation seem directly related;<sup>240</sup> the study for Agostino Chigi's stable from around 1512, where he marks the plan in powerful red chalk strokes and immediately checks it in elevation;<sup>241</sup> the two plans for the Chigi Chapel, where, like Bramante, he makes use of a finely meshed grid and proceeds from the radiating space of the dome, letting the borders float, rather than proceeding from the body of the structure itself;<sup>242</sup> the presumed construction drawing for the dome of the Chigi Chapel, where, possibly, he draws two levels of

the plan and the section interpenetrating each other;<sup>243</sup> his project for S. Lorenzo from 1516, preserved only in the copy on U 2048A, where the orthogonal elevation again stands in direct relation to the plan;<sup>244</sup> or the slightly later Oxford project for a villa, where he searches for a solution of the plan on the verso, which would allow him to outline the facade orthogonally on the recto and to enliven it spatially with wash.<sup>245</sup>

These designs of Raphael's, created before his collaboration with Antonio, convey an idea of the difference between the two approximately contemporary masters, and this individuality also characterizes Raphael's 1518 project, certainly designed independently of Antonio and known only through copies, absolutely the earliest surviving example in which plan, elevation, and section are related to each other with complete consistency in the terms defined by Alberti.<sup>246</sup> As illustrated in the section, it deviates from all previous projects precisely in the direct correspondence between the exterior articulation and the interior construction and in this respect approaches Antonio's earlier studies for the Palazzo Farnese.

Most likely in equal measure independent of Raphael, Antonio at the same time had proposed to preserve Bramante's Colossal exterior order and its complex rhythms in his purely orthogonal facade project, U 257A.<sup>247</sup> He then responds to Raphael's 1518 project with the plans U 252A (left half) and 254A, but most importantly with the related elevation U 70A, which already shows itself in its space-creating hatchings and the numerous corrections and detail sketches to be the outcome of thorough discussions in which the pope and his architecturally knowledgeable cousin Giulio de' Medici may have taken part (Fig. 28).<sup>248</sup> Significantly, the perspectival detail sketches do not concern themselves so much with the effect of the interior of St. Peter's as with the subsidiary rooms and their connection with the rest of the system, and thus with problems similar to those on the sketch U 1000A r., for the Palazzo Farnese. If the groundwork for all the methodological and graphic qualities of this study was already laid in Antonio's earlier drawings, it appears that the collaboration with Raphael nevertheless liberated his creative energies in a way he would never again experience.

In the further course of the planning, Antonio was able to impose a 9-palmi order on the exterior, mediating between Bramante and Raphael, and with it to give clearer expression to the principle of correspondence, as shown by his virtuoso section U 54A and his many plan and elevation studies for the southern

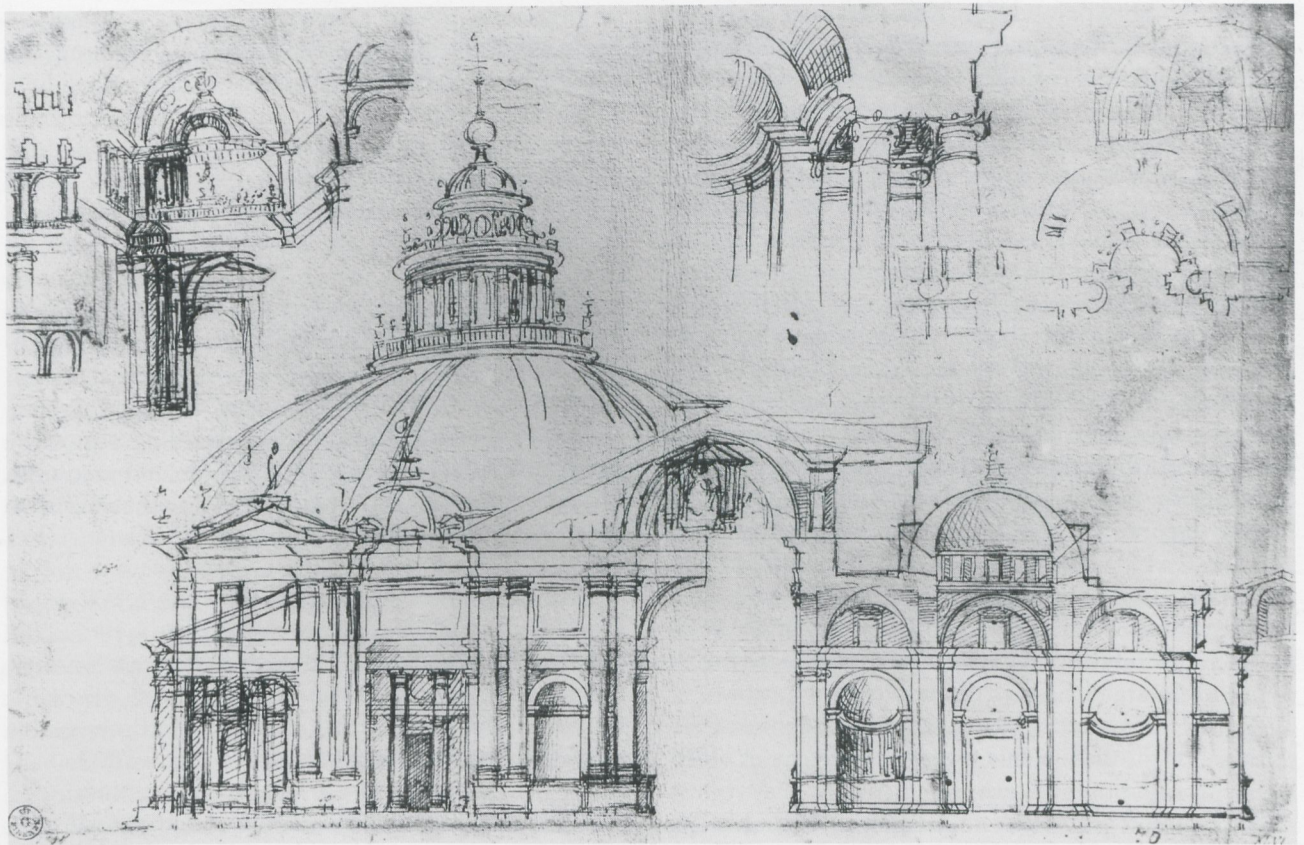
transept, which are polished down to the last detail.<sup>249</sup> On the plan U 35A, which, like U 34A and 36A, he carried out with the help of a grid, and in the scaled plan U 37A, he draws the various options on top of one another, just as Bramante had done on U 20A. On U 35A he also emphasizes the favored solution by graphic means.<sup>250</sup>

Antonio's share in the planning of the Villa Madama was no less decisive.<sup>251</sup> After Raphael and his presumed collaborator, Antonio's cousin Giovan Francesco, had failed to realize the first project due to the unstable terrain, the Medici had called in Antonio himself. He immediately demonstrated his technical and methodological competence by having the entire site remeasured (in height and breadth) and by proposing a more practicable terracing, thereby deriving a slightly reduced yet more axially symmetrical project. How indispensable was the combination of plan, elevation, and section for the solution of such problems is attested by his designs U 179A and 1518A—the products, as sober as they were consequential, of a bold calculator.<sup>252</sup>

The two masters must also have collaborated closely in the area of ancient studies. During the same year, when they were planning St. Peter's and the Villa Madama, Leo X commissioned Raphael to survey the ancient city of Rome.<sup>253</sup> In the letter in which Raphael presents the project to the pope, in fact, he talks about the destruction of ancient monuments during the eleven or twelve years since his arrival, mentioning, among other things, the "arco che era alla entrata delle therme Diocletiane."<sup>254</sup> Its destruction probably was connected with the restoration of the entrance, which had been carried out in 1518 by Francesco di Giuliano da Sangallo—as he himself remarked on U 284A—<sup>255</sup> on the commission either of Ascanio de' Sacchi, who owned a "barco. . . in loco terme diocletiani," or of Cardinal Ippolito d'Este, who had leased part of it until his death in September 1520.<sup>256</sup>

The survey of ancient Rome involved the two papal architects if for no other reason than that it served chiefly in the restoration of the city rather than for archaeological purposes. Before the physical specifications of the new city could be determined, "good" architecture worth preserving had to be incorporated and reconstructed. In Raphael's own words, the *paragone* with ancient monuments should spur both builders and architects to outdo Antiquity with its own means.<sup>257</sup>

Julius II had already, of course, begun the process of restoring his papal metropolis to its ancient glory. His architects, chief among them Bramante, had



28 Antonio da Sangallo the Younger. Project for facade, section, and other details of St. Peter's (U 70A r.; ca. 1519).

already developed methods of representation similar to those described by Raphael in his letter, as a means of handing down the ancient exemplars to posterity at least in graphic form. Such methods as the scaled triad of ground plan, elevation, and section; the use of a compass; and the reconstruction of destroyed parts by analogy to those surviving can, in fact, already be found before 1515 in the work of both Antonio da Sangallo and of Raphael, even before their intensive collaboration.<sup>258</sup>

What set Raphael's project for Rome apart from the Codex Coner and all earlier studies of ancient monuments, and made it the object of admiration among his contemporaries, was its historico-topographical method.<sup>259</sup> In determining the physical specifications for restoring ancient Rome, Raphael did not start, as did Bernardo della Volpaia before him and Serlio afterward, with building types and orders, but with areas, the first of which, the area between the Arch of Titus and the Porta Capena, he supposedly had worked out before he died.<sup>260</sup>

Although the sources link only Raphael to the

Rome project, he had Antonio's help for both the reconstruction of the streets and the surveys of individual monuments. Thus Raphael also must have counted on the relevant planning material collected over the years by Bramante and the Sangalli. Only when he had gained an overall view of which monuments were adequately surveyed, which were imprecisely or partially surveyed, and which were missing altogether, would he have ordered new, time-consuming surveys. And like Raphael himself, the busy Antonio probably played a delegating and interpreting role in the gigantic project rather than actively taking part in the surveys himself. The few drawings from Antiquity by Antonio that can reasonably be dated in these years were frequently made in connection with concrete building projects.<sup>261</sup> The systematic studies of the Theater of Marcellus, which he carried out together with his brother Giovanni Battista and probably also Peruzzi, in any case, stem from the time after Raphael's death.<sup>262</sup>

Thus the sources so far are inadequate for a more precise determination of Antonio's share in the Rome

project.<sup>263</sup> How closely it was tied not only to Raphael but to the pontificate of Leo X is shown by later developments. Neither Clement VII nor Paul III, neither Antonio's nor Raphael's students, carried the historico-topographical method further. Significantly, Fabio Calvo's *Simulachrum* of 1527 is based entirely on the ancient sources compiled by the Ravenna humanist for Raphael's project.<sup>264</sup> It was Pirro Ligorio who later resumed the work under changed circumstances.

How complex the development of architectural drawing was in the circle of Bramante and his immediate students, and how early Antonio da Sangallo's influence was felt, can also be seen by a glance at other masters of these dynamic years. A group of drawings in the Uffizi, which at one time were attributed to Jacopo Sansovino and then by Günther to a Sieneese working about 1525, can be compared with the Codex Coner, for the group similarly includes, besides ancient monuments, only projects by Bramante, and only those, moreover, in the representational style established by Bramante during his years in Rome.<sup>265</sup> The draftsman makes use of perspectival sections, opens the interior spaces at wide angles, only rarely draws pure elevations, and, like the young Antonio, favors isometric sections for details. Although he is still attested to being a collaborator of Antonio's in 1532, his bundle of drawings in the Uffizi may have originated before Bramante's death; indeed, some of the sheets—the projects for the Baptistery, the Oratorium Crucis, and SS. Celso e Giuliano, for example—may have been copied directly from projects made by the Bramante workshop.<sup>266</sup> This is also suggested by the fine graphic technique, with its light and dark contrasts and suggestions of spatial depth, which similarly characterize Aristotile's presumed copies after Bramante's projects.<sup>267</sup> In any case, his method of representation can hardly be reconciled with the more rational thinking that became current after 1514.

In contrast, most of the surviving drawings of the French stonemason and architect Jean de Chenevières must have been made during the pontificate of Leo X.<sup>268</sup> Like Bernardo della Volpaia, he too could have taken over the bird's-eye perspective favored in his overall views from Bramante.<sup>269</sup> Coherent pieces of workmanship, such as the double-sided doorframes of the Cancelleria, are drawn in elevation as well as in cross section, as he had probably been taught to do in a French building lodge.<sup>270</sup> Generally speaking, his tight, not very pictorial method of representation and his use of the French foot remain true to his native

training. His ground plans after existing buildings—predominantly projects by Antonio da Sangallo, together with the Cancelleria—are characterized by a Sangallesque precision, just as his only two presumably attributed buildings, S. Luigi dei Francesi and the Palazzo Regis, are directly inspired by Antonio. Oddly enough, none of his drawings from Antiquity seems to go back to models by Antonio. Before becoming an independent architect, which he became by 1518 at the latest, he could have worked as a stonemason under Bramante and Antonio and have learned the new principles of construction from them. If the Munich design for S. Giovanni dei Fiorentini is really from his pen, he would then already have been making use of the complementary combination of facade and section in the two halves of a drawing, such as could be found at that time principally in the work of Antonio and Raphael.<sup>271</sup>

This method of representation—which is still popular today—was also taken over after 1518 by the Bolognese sculptor and architect Domenico da Varignana.<sup>272</sup> In the drawings on folios 1 to 62 of his Codex Mellon, orthogonal elevations and perspective views, such as already were used by Giuliano da Sangallo, predominate. When he showed the interior of SS. Celso e Giuliano in a wide-angle, diagonal view toward the piers of the dome, he was perhaps, like Aristotile and Pseudo-Sansovino, copying a lost project by Bramante. The rooms of a Roman bath on folios 51 v., 52 v., and 54 r. may also go back to models from the time before 1514; here, a perspectively foreshortened ground plan completes the perspectival section, a procedure that is already found in Leonardo's Milan sketches and that once again may have been brought to Rome by Bramante.<sup>273</sup>

Domenico avoided the perspectival and the isometric cross sections of details that are so characteristic of the early Antonio the Younger, and he failed to include even a single building of Antonio's, though he did copy Raphael's unexecuted project of 1518 for St. Peter's. This alone is an indication that the two papal architects, despite close collaboration, represented independent points of view. After having, on folio 59 r., continued to join the elevation of the round temple in Tivoli with a perspectival section—as ineptly as had Chenevières the ambulatory in Antonio's model—Domenico began, on folio 63, undoubtedly again inspired by Raphael, to make a complementary division of the elevation into facade and section.

No one developed Raphael's strict method of design and representation more fully than his star pupil, Giulio Romano.<sup>274</sup> From the color-differentiated



design for the courtyard of the Palazzo Branconio of 1519 and the pen sketch for the Palazzo Adimari of 1520 to Andreaesi's probably faithful copies of his designs for the Palazzo del Te of ca. 1525, his projects in the Codex Chlumczansky, his designs for the Porta del Te, and his late house in Mantua, he kept—though by no means exclusively—to the orthogonal elevation. He endowed it with a previously unknown sensuousness, even permitting himself in the process an occasional concession to perspective.

Equally obvious is the dependence upon Raphael and Antonio of the so-called Italiener C, recently identified as Riniero Neruccio da Pisa.<sup>275</sup> He drew ancient monuments almost exclusively, as a rule representing them in strict orthogonal projection—with the exception of the rooms of a bath on folios 15 v. and 16 r. and v., which, with their combination of perspectival section and perspectival ground plan, go back to similar, if not indeed the same, models used in the Codex Mellon.<sup>276</sup> Although he seems not to have made clean copies of the drawings in the Vienna sketchbook until after 1519, he copied a number of other sheets after models from Bramante's circle, especially those by Giancristoforo Romano and Peruzzi, which date from the period before 1510.<sup>277</sup> The same master obviously drew the Vienna designs for S. Giovanni dei Fiorentini, which both in their formal language and in their method of representation are so closely allied to Antonio's projects of 1518–20 that they have sometimes been attributed to him.<sup>278</sup> In fact, Riniero worked closely with Antonio as a stonemason and architect for Loreto and left him—for example, in 1535—some of his own drawings of ancient architecture.

How differently Bramante's immediate followers drew is demonstrated by Peruzzi's extensive corpus.<sup>279</sup> Not only in his drawings from Antiquity but also in his presentation drawings, he preferred throughout his life—in diametric opposition to Raphael and Antonio da Sangallo—a perspectival method of representation, such as he had already used before his encounter with Bramante. His few orthogonal views of ancient buildings may thus have been copied from models of the Sangallo circle, especially since they are measured in *braccia fiorentine*, in contrast to his independent surveys.<sup>280</sup> Peruzzi's predilection for perspective is all the more remarkable because he had already learned the precise representation of details in complementary elevations from Bramante by about 1506,<sup>281</sup> and in the process of designing he in no way renounced the use of orthogonal elevations and sections.<sup>282</sup> About 1507 he copied Antonio's isometric cross section of the Doric entablature found in St. Peter's, and in the fol-

lowing period he was frequently to employ the isometric section—the “*projectura quadra*,” as he called the procedure on U 409A r.<sup>283</sup> Toward the end of his life, in his project for St. Peter's on U 2A, Peruzzi combined perspectival section and perspectively foreshortened ground plan, which had been familiar to him since his early years in Rome, with a Bramantesque bird's-eye view.<sup>284</sup>

Thus the more intensively one studies the beginnings of Roman architectural drawing, the clearer becomes Bramante's unique importance. While only a few isolated strands of development lead back to Francesco di Giorgio, Cronaca, or Giuliano, Bramante alone seems to have united all the various possibilities of representation: the orthogonal triad, the complementary elevation, the drawing of one story within another, and the numerous methods of perspective and isometry. As a painter—a follower of Piero and Mantegna, and a friend of Leonardo's—he was familiar with all the tricks of perspective. As a follower of Alberti and an adviser to the Milanese cathedral building lodge, he was familiar with all of the orthogonal methods, and although only a few original drawings of his have come down to us, his students and admirers prove how broad and unorthodox the spectrum of his means of representation must have been.

If collaboration with Raphael meant a major enrichment of Antonio da Sangallo's formal language, with its otherwise monotonous tendencies, the repercussions for his design method and his drawing style still remained astonishingly minimal: The clean copy U 122A for St. Peter's differs from the earlier Cancellaria project mainly in the spare use of wash.<sup>285</sup> And if the design U 7976A, a drawing for base and pedestal of the large interior order at St. Peter's, is drawn more precisely than Bramante's capital study U 6770A, Antonio still nevertheless follows similar formal and geometrical principles insofar as he translates the antique prototype into repeatable formulae with the use of compass and ruler.<sup>286</sup>

Similar design principles also characterize Antonio's projects for S. Giovanni dei Fiorentini, S. Marcello, S. Maria di Loreto in Rome, S. Marco in Florence, and the Cathedral of Foligno, in which something of Raphael's spirit lives on.<sup>287</sup> Yet when, after Raphael's death, Antonio was promoted to first architect of St. Peter's and Peruzzi to be his deputy, this was fruitful mainly for their joint study of Antiquity.<sup>288</sup> Stylistically Antonio drew far more inspiration from unorthodox masters such as Michelangelo and Giulio Romano. He had drawn Michelangelo's model for S. Lorenzo early in 1518 on U 790A r., in Rome.<sup>289</sup>

The effect of the inserted attic and the bundled verticals of the model, or of the bracketing of the arcades of the Medici Chapel, is not slow to make itself felt in his projects for the facade of St. Peter's (U 72A), S. Luigi dei Francesi (U 868A), or S. Giovanni dei Fiorentini (176A, 1364A).<sup>290</sup> Even the abstract volutes of the "finestre inginocchiate" of the Palazzo Medici in Florence found a direct reflection in 1526 on the rear wall of the loggia of the papal palace in Loreto (U 923A), and in the same year he must have copied on U 816A and 817A projects by Michelangelo for the Laurentiana Staircase.<sup>291</sup> The effect of Giulio's fondness for rustication and encrustation also becomes noticeable immediately (\*U 1041A, 786A).<sup>292</sup>

Peruzzi's influence does not even seem to have affected Antonio's graphic representations. Thus, for example, the unaccustomed perspective of his chimney design U 170A for Hadrian VI is much nearer to Giuliano's last drawings than to Peruzzi.<sup>293</sup>

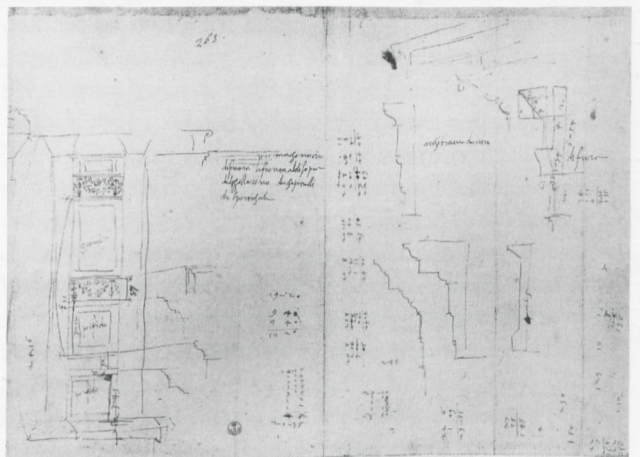
From about 1525, certainly encouraged by Peruzzi, Giovan Francesco, and Giovanni Battista, and also with the idea of a Vitruvius commentary in mind, he renewed his critical study of the great Roman monuments and their architectonic structure, this time in a far more theoretical way. Thus he made with Giovanni Battista a precise survey drawing and reconstruction of the Baths of Caracalla and studied the imperial fora and the Porticus Pompei with a keen sense for archaeology.<sup>294</sup> But most of all he concentrated on the Pantheon, the matriarch of all Renaissance architecture. Its exceptional size and complexity perhaps explains why there had been no reliable measuring of the entire building to that date,<sup>295</sup> although Antonio and his cousin Giovan Francesco had measured various details of the Pantheon, or copied them from other models, during Bramante's lifetime,<sup>296</sup> and in the Codex Coner most space was given to the Pantheon and the Colosseum.

When, toward 1525, Antonio began a more systematic treatment of antique architecture, he must have determined that he was missing a great mass of critical information about the Pantheon, particularly regarding certain details and the relationship between the interior and exterior elevations.<sup>297</sup> The structural thinking that we can see again and again from his studies for the Palazzo Farnese, St. Peter's, and the Villa Madama, which can be followed in such a full way in the case of no earlier architect, speaks clearly from the questions he poses on U 1157A v. Thus he inquires after the precise height of the floor inside and out ("chome sachorda") and after the continuity of the cornice ("chome safronta"). He seems to have

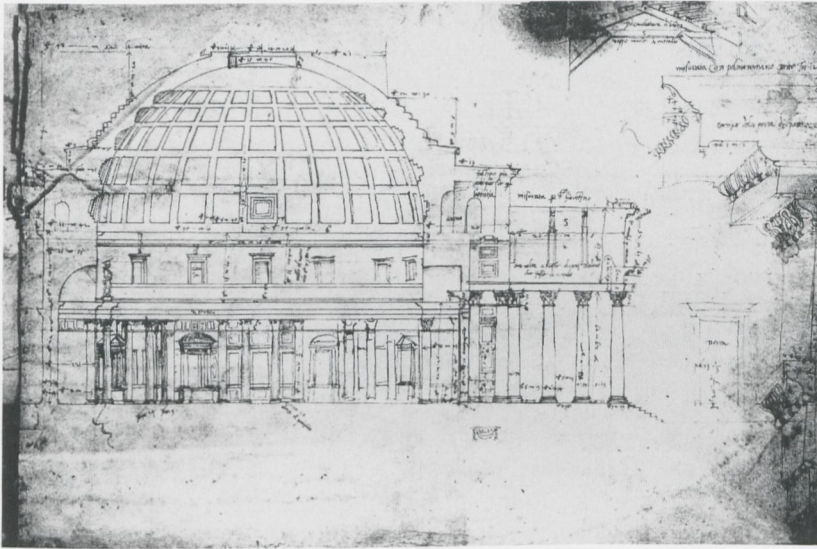
solved these problems immediately, as the probably contemporary studies on U 1157A r. testify (Fig. 29). In the same context he must have noted on the earlier measured drawings U 1061A, 1191A r., 1219A, and probably also 85A v. his observations on the proportions of the Colossal interior order of the Pantheon.<sup>298</sup>

He must have then summarized all these surviving studies, surely the smaller part of those actually made, in a section, which would have differed only minimally from Peruzzi's Ferrarese section, the earliest measured, purely orthogonal section of the whole building that we possess (Fig. 30). Indeed, the use of the *braccio fiorentino* divided in 60 *minuti* and the correspondence of numerous measurements support the idea that Peruzzi simply copied Antonio's lost section and completed it with a few details in *piedi* and *palmi romani*, noted on the margin.<sup>299</sup>

Not until Antonio had achieved complete clarity about the total structure of the building in this way could he turn to the numerous inconsistencies that could not escape a student of Bramante and even led Michelangelo to his theory of the three architects.<sup>300</sup> If he gave himself no rest seeking more consistent solutions on U 306A, \*841A, 874A, 1060A, 1241A, 1339A, or 3990A,<sup>301</sup> this was less a regression into Gothic thinking than a thoroughly creative acknowledgment of the teaching of Bramante, who of course had attended with similar rigor to correspondence and axiality in the Tempietto and in his design for the dome of St. Peter's.<sup>302</sup>



29 Antonio da Sangallo the Younger. Studies after the Pantheon (U 1157A r.; ca. 1525).



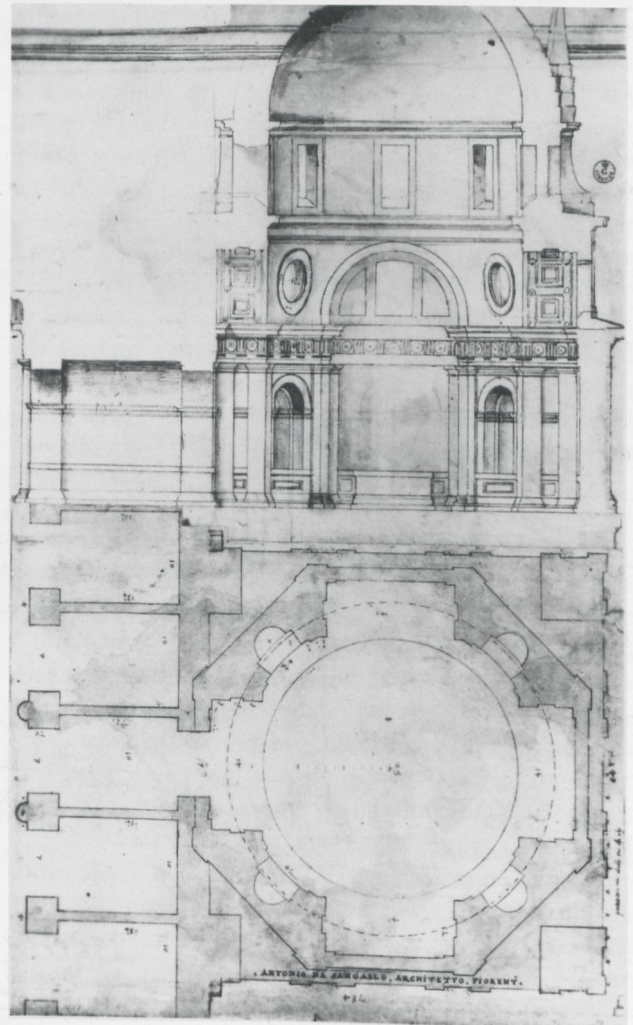
30 B. Peruzzi (after Antonio da Sangallo the Younger?). Section of the Pantheon (Ferrara, Biblioteca Comunale, MS. Classe I, n. 217; after 1525[?]).

31 (below) Antonio da Sangallo the Younger. Project for the Cappella Medici at Montecassino (U 172A r.; ca. 1535).

*Antonio da Sangallo the Younger's Late Period:  
1527-46*

After 1527, in his projects for the Cappella Cesi in S. Maria della Pace (U 708A), for S. Maria di Montemorro (U 173A), for S. Girolamo degli Spagnoli (U 904A), for the Medici chapels in Montecassino (U 172A; Fig. 31) and in S. Maria sopra Minerva (U 178A), and finally for St. Peter's (U 66A, 256A, 259A), Antonio raised the level of his presentation drawings to a perfection previously unknown.<sup>303</sup> In contrast to Peruzzi, he stayed true to the more effective orthogonal projection, even for complicated structures like St. Peter's, and used wash, slightly lighter than in his early drawings, to create light and shadow and thus increase spatial effects. He must have retained this procedure for his definitive project for St. Peter's from 1538 onward, of which his co-worker Labacco then copied his most accurate copperplate engravings.<sup>304</sup> In the project for Montecassino (U 172A), or in the late dome project for St. Peter's (U 261A, 267A), he drew the plans of several stories one above the other, as had been the practice of Late Medieval construction teams and the Bramante circle and as he himself had already done about 1526 in a study of the Tomb of Theodoric (see Fig. 19).<sup>305</sup> This method thoroughly corresponded to Antonio's method of rational planning.<sup>306</sup>

This process of technical perfecting falls, not by accident, in the troubled years before and after the Sack of Rome, which meant a burdensome caesura in Antonio's life: In 1526 he entered into a relationship with the Florentine patrician Isabella Deti, a woman



of difficult character who drove him to maintain an all-too-extravagant lifestyle.<sup>307</sup> In May 1527, the Sack destroyed the aestheticism of the previous decades. Periods of belligerent unrest made fortification architecture a priority throughout the Papal States for the first time since Alexander VI and demanded a good part of Antonio's energies from then on.<sup>308</sup> Finally, toward the end of 1534, his most important patron, Alessandro Farnese, became pope and inundated him with commissions; these he had to deal with for the most part single-handedly after Peruzzi's death in 1536.

How far-reaching was the impact of these events on the nature of the deeply religious master can be seen in his handwriting alone. After 1527 the ductus becomes more hasty, more habitual, sketchier, and seems occasionally hard, rushed, even nervous (Fig. 32e-i), and particularly in the overburdened years after 1537 these traits appear in a heightened form (Fig. 32j-m).<sup>309</sup> Thus, he typically draws abbreviating hyphens as a ligature over the vowels without a break, while before 1527 he usually used them in an isolated fashion (Fig. 32a-g).<sup>310</sup> Most of all, he changes the *h*, making it approximate the form of the standard modern lower case by opening the lower part and doing without the fatly looped upper stem. It is possible that this change was motivated by confusion between a *ch* and a *g*, which in his earlier hand sometimes look identical. The lower curve of the *z*, which formerly he had often drawn dragging down, he now also tries to make approximate the norm. Drawings such as the geometric study on U 1456A, where both forms of the *h* appear side by side (Fig. 32e), may have been made during the transitional years 1527-29.

The distinctions in the handwriting samples datable between years from 1510 to 1527 are less obvious. On the earliest, \*U 1484A v., from around 1510, and on related sheets such as U 1191A, one senses a youthful swaying of direction, which later tends to go slightly to the right (see Figs. 7h, l, 22, 32a-d).<sup>311</sup> The *g* and *h* are still provided with thick, occasionally even left-swelling curves. The lower strokes of the *s* and *f* occasionally open out to small loops. Before 1514 the *z* frequently ends with a rounded hook. Individual letters possess not only larger upper and lower lengths, but have a more sweeping, unrestrained, youthful character. The difference of the controlled, more rational inscriptions from 1514/15 on the designs for the Palazzo Farnese is already unmistakable (see Fig. 7m).<sup>312</sup> The listing on \*U 1344A r., dated November 1526, then characterizes a yet more decisive attack and a diminution, concentration, and simplification of

forms, again mainly of the *h*, whose upper loop frequently is left off (Fig. 32d). Nevertheless, it is anything but easy to provide a sequence for the drawings of the period after 1513 and before 1528 solely on the basis of the handwriting of this or that phase.

It can hardly be a coincidence that, on the basis of their handwriting, most of Antonio the Younger's theoretical studies can be dated to the period after the Sack of 1527, as the drop in building commissions gave him time to consider a commented edition of Vitruvius.<sup>313</sup> His preoccupation with Vitruvius led him not only to draw the "homo quadratus" on U 1249A r., as a norm for the Doric,<sup>314</sup> but also to study antique monuments systematically and with a hitherto unknown precision.

In doing so, he replaced the *braccio fiorentino*—which he had retained up to 1525 mainly because it corresponds nearly exactly to 2 *piedi antichi*, and the measurements of the older drawings of antiquities had been calculated with this unit—with the *piede antico*.<sup>315</sup> Thus it became even easier to recognize the modulus and a building's relation to Vitruvius's teaching right away. Now he no longer concentrates on a few exemplary buildings nor on the most beautiful detail as he had during his years of training and apprenticeship, but rather he analyzes the various orders and the building types (theater, bath, and temple) to which Vitruvius devotes Books III-V. On U 1427A v., he even gives indications for a future classification of his drawings of antiquities, not necessarily based on Vitruvius or Alberti, but rather following format and building type (temple, triumphal arch, triumphal column).<sup>316</sup> This ambitious undertaking could find support in the numerous drawings of antiquities that Antonio the Younger himself had prepared, copied, inherited, or received from collaborators such as Giovan Francesco and Giovanni Battista from the time of his Roman beginnings. For the more monumental buildings he had to turn to his own measurements and those that he and Giovanni Battista had carried out in the mid-1520's with a more critical approach.<sup>317</sup>

This intense preoccupation with Vitruvius and the antique also led Antonio to calculate his orders and his architectural detail in *piedi romani* and antique moduli and, in his domestic architecture, to attend more strictly to the sequence of vestibulum, atrium, cavaedium, peristylum,<sup>318</sup> perhaps even inspired by his deceased cousin Giovan Francesco, whose villa design from ca. 1518 anticipated the interior disposition of Antonio's later houses (see Fig. 37).<sup>319</sup> Antonio must have also prepared a great part of his

per b...  
...  
1518

a

fabile, quello lo go p...  
e falso e no po fare qua do no a  
g... e b... qu... qu...  
1520/21

b

aliquidillo questi sono buoni dove  
fatto hanno sia sottile

c

otto m... bianchi li m...  
sono i due fr...  
1526

d

sup... e la Cub...  
...  
dalle mis... sup...  
1528-30

e

...  
bianco  
1530

f

...  
...  
...  
1531

g

...  
...  
...  
1534

h

...  
...  
...  
1535/36

i

...  
...  
...  
1538/39

j

Questo sic...  
...  
...  
1540

k

La qu...  
...  
...  
1541/42

l

...  
...  
...  
1545

m

32 Antonio da Sangallo the Younger's handwriting 1518-46: a 1518 (U 1228A v.) b ca. 1520/21 (U 33A) c ca. 1523 (U 717A r.) d 6 November 1526 (\*U 1344A r.) e ca. 1528-30 (\*U 1456A) f 1530 (U 706A v.) g 1531 (proemio, fol. 3 r.) h ca. 1534 (\*U 1282A r.) i 1535/36 (\*U 1014A r.) j 1538/39 (\*U 1342A r.) k ca. 1540 (U 62A v.) l ca. 1541/42 (\*U 902A r.) m 1545 (U 991A r.).

numerous copies after Taccola and Francesco di Giorgio shortly after 1527, and have concerned himself with mathematical and astronomical problems that he needed for the commentary on Vitruvius's Books IX and X.<sup>320</sup> The changes in his handwriting are thus also contemporary with an entirely more conscious and reflective conception of his artistic tasks.

Oddly enough, a change in his drawing style corresponding to the change in his script comes about only gradually. The sketches for the Palazzo Pucci in Orvieto (ca. 1528–34), the Cesi Chapel (1529/30), the Fortezza da Basso of 1534, the palace of Luca Massimo and his own house in the Via Giulia from around 1535, or for the entrance of Charles V into Rome in 1535/36, are not fundamentally distinct from those of the period before 1527.<sup>321</sup> The same holds true for his figurative style, which does nonetheless lose something of its charm.

Not until the innumerable studies for the definitive project for St. Peter's from 1538 and the following years does Antonio the Younger's drawing style increasingly take on that sketchy hastiness that had been heralded years before in his handwriting and in a few studies such as U 78A for St. Peter's (ca. 1535) or U 918A for the Palazzo Farnese (before 1520?) (see Fig. 27).<sup>322</sup> Painstaking details or spatial clarifications become rarer, the contrast between the hastily composed sketches and the mathematically dry clean copies increases.<sup>323</sup> In the case of the latter, distinguishing between the hand of the master and those of his collaborators is almost impossible, especially since Antonio usually reserved the scaling and the commentary for himself. He now no longer arranges his sketches and their accompanying inscriptions carefully and evenly across the sheet, as he may have learned to do from Bramante; rather, he fills in every gap without a second thought for aesthetic considerations. This new, occasionally chaotic-seeming spontaneity expresses itself most overtly in the designs for the Porta Santo Spirito of 1541/42, where drawing and commentary even overlap each other. Nevertheless, these last studies possess a new graphic appeal, an individual fecundity, like none of his earlier sheets. Indeed, it is conceivable that his two great rivals in Rome of the thirties, Peruzzi and Michelangelo, and painters like Perino del Vaga inspired him to this new freedom. At the same time, it also represents a return to the spontaneity of his own pre-Bramantesque early period (see Fig. 14).

Since there is no project for which all stages of the design survive, only the totality of Antonio's drawings can convey an idea of his design method and its possi-

ble changes, as well as the method of his workshop. Basically, most of his projects fall into a sequence matching the six design stages we already can discern in Bramante. Measurement of the site and existing structures, if any, as well as the first sketches of ideas stand at the beginning (see Figs. 5, 23, 27). Such projects, not yet drawn to scale, were presented to the patrons or even developed with their cooperation.<sup>324</sup> The first sketch plans often are accompanied by elevation sketches of the facade, the courtyard, or the interior to serve as a control.<sup>325</sup> Antonio certainly did develop elevation and plan together.<sup>326</sup> If he usually limited himself to a few elevation details and spent relatively little energy on checking the spatial effect, that was due mainly to his sure knowledge of tried-and-true systems and types of spaces to which he returned again and again. In any case, the clean copy of the plan already presumed precise studies of the individual building parts and wall systems. He checked over the mutual relationships between the interior and exterior constructions and the coherence of the individual spatial components with sections and related detail plans (see Fig. 28).<sup>327</sup> From these studies he developed the presentation drawing for the patron, which frequently offered alternatives for choice and was easily translated into a wooden model (see Figs. 26, 31).<sup>328</sup> Not until the patron had decided on the realization of this or that project did Antonio develop the plan to the point where it could be carried out. Thus, studies for the atrium, stairwell, and window aedicules follow upon the presentation drawing U 627A for the courtyard of the Palazzo Farnese. And similarly the flood of detailed studies for St. Peter's does not begin until around 1519/20 and again after 1538, after Leo X and Paul III had decided on specific projects for execution. Thus, one must also distinguish between presentation models, such as models prepared for competition,<sup>329</sup> and working models, like Antonio's wooden models of 1521 and 1538 onward for St. Peter's.<sup>330</sup> The sixth and last stage, namely, the preparation of working drawings (see, for example, \*U 7976A for bases and pedestals of the Colossal interior order of St. Peter's, or U 788A for the cornice of a portal of the Scala Regia) and their translation into working drawings or templates drawn on a scale of 1:1 for the use of the laborers, did not come until the final decision on the working project, directly before construction.<sup>331</sup>

These six stages, of which the second and fourth could be broken down further, had been anticipated by fifteenth-century practice. A glimpse at the drawings of an architectural autodidact like Michelangelo

nevertheless shows that Antonio the Younger's contemporaries by no means all planned using the same method.<sup>332</sup> He himself seems to have refined this method rather than ever fundamentally changing it in the course of his nearly forty years as a practicing architect. No design of an entire facade from the period before 1535 is calculated completely in *dita*, that is, twelfths of a *palm*, as are U 1111A and I286A;<sup>333</sup> and only from around 1538–40 did Antonio completely convert to calculating details such as orders or door and window mounts in antique feet and in thousandths of moduli.<sup>334</sup>

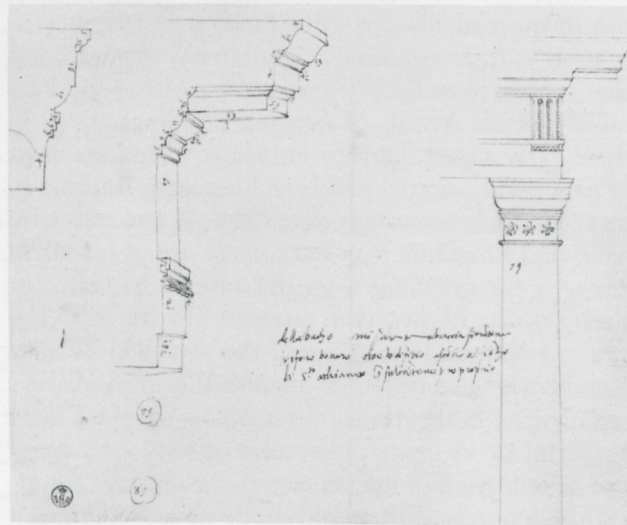
#### *Antonio the Younger's Collaborators*

Like Bramante, Antonio the Younger involved only a few highly qualified collaborators in his design process.<sup>335</sup> Until 1530, these are mainly Antonio Labacco, his cousin Giovan Francesco, his brother Giovanni Battista, and probably also his other brother Francesco; after 1530 they are Giovanni Battista and Bartolomeo Baronino and occasionally Giovan Francesco's brother Sebastiano, known as Aristotile.

As early as 1512 Labacco had worked under Antonio on preparations for the Lateran Council (see Fig. 71), and in 1552 he still acknowledged Antonio as "mio maestro."<sup>336</sup> Under Bramante's and Antonio's guidance—that is, probably between 1509 and 1514—he learned the newest methods of reconstructing and depicting ancient ruins, many of which were just then beginning to come to light.<sup>337</sup> He must have stored his drawings carefully, and even copied many of the drawings from Antiquity made in the Sangallo circle, so that they could later be published in his book of engravings of 1552.<sup>338</sup> This also explains why astonishingly few of his drawings after the antique (U 1190A, I338A, I664A, or I850A) ended up in Antonio's collection.<sup>339</sup> Only some of his admirable engravings follow the rational triad of plan, elevation, and section, and among these the studies of the Mars Ultor Temple and the Forum of Augustus are based on studies made after 1520 by the Sangallo circle.<sup>340</sup> Parts of others, such as the purely perspective reconstruction of the Basilica Aemilia—already destroyed by 1506—may go back to the time before 1514, when Labacco, like Aristotile, learned from Bramante the method of representing both buildings and ground plans in perspective.<sup>341</sup> This is also suggested by the details in the drawing of the Basilica Aemilia on U 1190A, where the numbers and the method of representation are directly reminiscent of Antonio's and Giovan Francesco's drawings from the time before 1514 (Fig. 33).<sup>342</sup> The combination of an elevation

with two ground plan levels and the section of a column base from the Mars Ultor temple, which recalls Peruzzi's Bramantesque detail studies of about 1506, probably also go back to Bramante.<sup>343</sup> A glance at Serlio's woodcuts after similar models is enough to reveal the incomparably more profound training of this long-standing collaborator of both masters.<sup>344</sup>

Labacco was so closely bound to Antonio that all his life he wrote numerals resembling Antonio's from the time before 1513; as a consequence, sheets such as U 1058A have falsely been ascribed to him (see Figs. 6, 32a).<sup>345</sup> In the ground plans U 720A and I71A for S. Maria di Monserrato of 1518, Antonio the Younger's earliest project to date, for which Labacco's participation has been documented, the hands of the two are hardly separable, and so Labacco may have participated on numerous other drawings, surviving as well as lost. In ca. 1519 he must have built Antonio's model for S. Giovanni dei Fiorentini. Perhaps because he participated in its design and undertook some changes in the printed version, he claimed this later as his own invention.<sup>346</sup> Probably he also made the model of Antonio's project of 1521 for St. Peter's. In the 1520's he assisted Antonio in projects for the transformation of S. Giacomo degli Spagnoli<sup>347</sup> and accompanied him to Piacenza, Modena, Mantua, and Ancona to inspect fortifications (U 1151A). His copies of construction drawings for mills probably were not made until after 1527. The large wooden model of about 1538 for St.



33 Antonio Labacco. Entablature of the Foro Boario with explanation by Antonio the Younger (U 1190A r.).

Peter's was the high point of Labacco's numerous activities.<sup>348</sup> Even after Antonio's death he seems to have remained active in the planning of the Palazzo Farnese.<sup>349</sup>

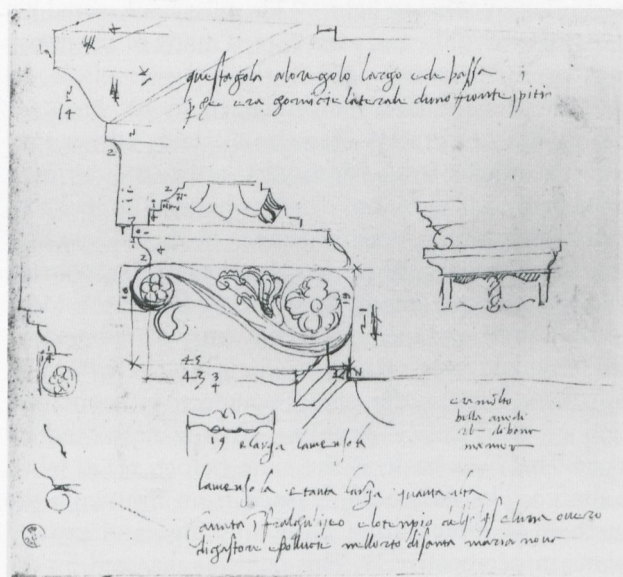
In contrast to Labacco, Giovan Francesco (1484–1530) can be grasped as an independent architect.<sup>350</sup> Like his cousin Antonio, he probably came to Rome and to papal service in the spring of 1504 in his uncles' following. And if he has not yet been documented during the pontificate of Julius II, he must nevertheless have belonged to that circle of talents who, in close collaboration first with Giuliano and then with Bramante and Antonio, matured into independent artists.

According to Vasari, Giovan Francesco, together with Giuliano Leno, profited from selling building materials.<sup>351</sup> In December 1514, he was named as *misuratore* and *soprastante* of the crew on site on the basis of his experience "in geometria et arithmetica" and thus became Raphael's immediate collaborator. In his earliest drawings, which he may have made before 1514, the 3 is, as with the young Antonio, still graced with a hook (Figs. 34, 35b).<sup>352</sup> Before 1518, and probably already around 1513/14, he normalized it as his cousin had done (Fig. 36). Perhaps some of these early sheets date back as far as ca. 1505. In any case, U 1326A (see Fig. 35b), which with its fine hatching and angular handwriting is slightly different from the rest of the early group, and U 1650A v. seem to have been copied after drawings by Antonio the Younger from the time before 1507 (see Fig. 15).<sup>353</sup> While Antonio in most of his early drawings already concerns himself with a structure in its entirety, the drawings that survive from Giovan Francesco's early period are mostly detail studies of existing buildings. Even in these early sheets, Giovan Francesco surpasses most of his contemporaries and even his cousin Antonio in precision and painstaking reproduction, and thus Giuliano and Bramante may have made use of his talent not only for drawings after the antique but also for clean copying of their own projects. The beautiful elevation fragment U 2143A r. of the so-called Basilica Aemilia may also be his, distinguished from Giuliano's earlier sheet in the "Libro degli Archi." of the Codex Barberini by its greater exactness of the Doric detail and its reduction of the perspectival aspects.<sup>354</sup> Significantly, a purely orthogonal mode of representation already predominates in these early drawings, as Antonio the Younger himself also preferred, and as became more and more established in the Bramante circle after about 1506, as opposed to the combination of section and perspective. U 1704A and 85A confirm

how closely Giovan Francesco was working with Antonio even before 1514 (see Fig. 34).<sup>355</sup> Since his drawing style shows no trace of Filippino's influence and is perceptibly closer to that of Giuliano, indeed, at times even approaches Aristotile's pictorial chiaroscuro, he must have undergone a wholly different training. The precision and theoretical awareness of even his early drawings nevertheless clearly go beyond Giuliano.<sup>356</sup>

The drawings of the years 1514–20 differ from the foregoing ones in their normalized 3, and from the later ones in the horizontal stroke in the *ch*, as is found on U 273A, 863A, 909A, 1292A, and 1898A, all datable around 1518/19 (see Figs. 35d, e).<sup>357</sup> Thus if Giovan Francesco's early handwriting as found on U 1329A, 1377A, 1704A, or 1852A is united with Antonio's later handwriting, this means that Antonio annotated his cousin's drawings after his death in 1530.<sup>358</sup> The putative early sheet U 1652A, recording antique details that had been found and reburied in Bramante's lifetime, shows Giovan Francesco's late handwriting with the calligraphic *d* and thus must be a copy that Giovan Francesco made of another drawing after 1520.<sup>359</sup>

After Giovan Francesco had proved himself in Bramante's workshop, Raphael entrusted him to prepare his designs in executable form, probably not only for



34 Giovan Francesco and Antonio the Younger da Sangallo. Studies after the antique (U 1704A r.; ca. 1512).



la trouera qualche duno inguosto  
Antonio alias abado inuoma

a

A spoglia dritto chana

b

lame a fo  
tanta largia quama alta  
quale el tempo deli l'f chom

c

una noua giornata  
36 mte guffi

d

fregato di girari nella facciata  
d'uno albetano i banti

e

fandone  
di sopra

f

suo architrave di questa chompe  
della zebra

g

stada uecra epu bafa chera  
mona p 7 1/2

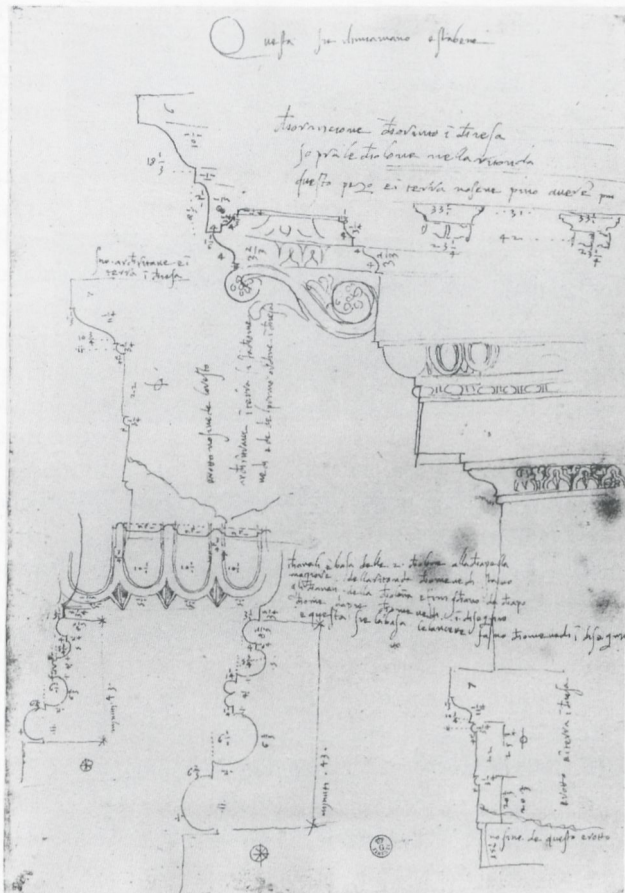
h

piano dello schavone  
manomera / zapaso

i

35 Handwriting of Antonio Labacco and Giovan Francesco da Sangallo: a Labacco 1529 (U 1793 v.) b Giovan Francesco ca. 1505 forward (U 1326A r.) c Giovan Francesco ca. 1512 and Antonio the Younger ca. 1512 and after 1530 (U 1704A r.)

Giovan Francesco: d ca. 1515 (U 1898A v.) e ca. 1518 (U 863A v.) f after 1520 (U 1346A v.) g 1524/25 (U 1331A r.) h ca. 1525 (U 1399A r.) i 1526 (\*U 1396A r.).



36 Giovan Francesco da Sangallo. Studies of the Pantheon (U 1387A r.).

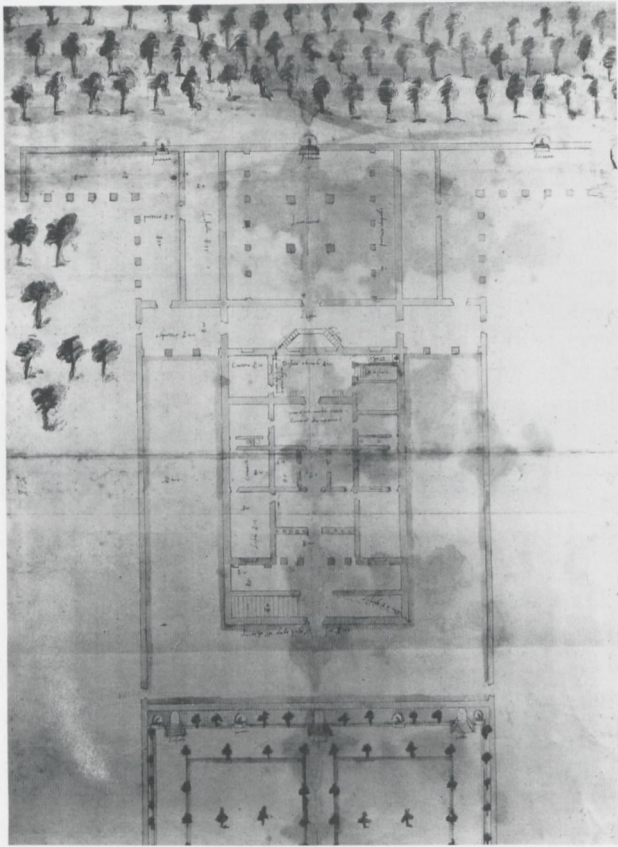
the Palazzo Alberini, Villa Madama, and Palazzo Pandolfini, but also for the remaining projects of those years. Giovan Francesco could thus also have drawn the model for Raphael's second project for St. Peter's, which has been preserved in the Codex Mellon.<sup>360</sup> Raphael also assigned him the execution of the Palazzo Pandolfini. Thus, Giovan Francesco, who was equally experienced in theory and in craftsmanship, may have played a greater role in the material translation of Raphael's architectural ideas than has hitherto been supposed. At the same time, he was making drawings for his cousin Antonio, not only for projects in which both papal architects participated, but even for one, S. Giovanni dei Fiorentini, in which they were competing.<sup>361</sup> As the partner of Giuliano Leno, a supplier of materials, he had his own interest in view in all these costly undertakings, especially during the building of St. Peter's, and during the years of his most intensive collaboration with Raphael he worked also as an independent architect.

The drawings of antiquities from these years between 1514 and 1520, however, do not reveal that Giovan Francesco was then working for Raphael. On U 1163A, 1329A, 1705A, and 1716A he makes as much use as before of the perspective and isometric section.<sup>362</sup> Among these, U 1163A and 1329A represent antique cornices that lay in the house near S. Rocco that Antonio had rented in 1512; thus they are unlikely to have been copied from older models.<sup>363</sup>

Not much later, he draws the orthogonal studies after the Pantheon on U 1387A expressly as his own achievement (see Fig. 36).<sup>364</sup> Like almost all of his drawings of antiquities, they are measured in *braccia fiorentine*, which, like his cousin, he must have calculated as 2 *piedi antichi* exactly.<sup>365</sup> Likewise ca. 1515–20—that is, about the same time as Francesco da Sangallo's sheet U 284A—he copied the ground plan of the Baths of Diocletian on U 2163A, probably after a lost model by Antonio.<sup>366</sup>

The *ch* with crossbar also turns up on Giovan Francesco's only surviving design from this second phase, U 3963A, a design for a villa from about 1518 (Fig. 37).<sup>367</sup> Although in this project he sticks with the perspectival concessions as used by Giuliano, at the same time he anticipates the schema of the Vitruvian plan that Antonio would prefer after 1527.<sup>368</sup> Despite the dryness, one senses here, as in his contemporary Palazzo Balami or in his version U 292A of Antonio's contemporary project U 1303A for Bonifacio da Parma,<sup>369</sup> something of the close collaboration with Raphael, first of all on the Villa Madama. Indeed there is likewise a dominating axis in depth that binds together the individual areas of the villa. Around 1513–20, he may also have invented the machinery on \*U 1528A, \*3950A, and \*3951A, on which he was particularly dependent both as a building contractor and as an active master builder.

After Raphael's death, Giovan Francesco became Antonio's most important co-worker and is documented as such on the projects for S. Giacomo Scosacavalli and S. Giacomo degli Spagnoli, on the Palazzo Ferrari, and on the Roman mint and north Italian fortification projects (see Fig. 35f–i).<sup>370</sup> The smallest number of drawings of antiquities have been preserved from this last decade,<sup>371</sup> and these—notably U 1375A, 1378A, 1382A–1386A, 1388A, 1393A, 1394A, and 2057A—are dedicated to a great extent to theoretical considerations or to entire structures—possibly in connection with the studies of Vitruvius with which he himself then to a greater degree was occupied and which for some time he studied even together with Michelangelo.<sup>372</sup> Thus, for example, he reconstructs



37 Giovan Francesco da Sangallo. Project for a villa (U 3963A r.; ca. 1518).

the tectonic frame of an antique “Basiglicha” on U 1378A,<sup>373</sup> and likewise occupies himself on U 1385A not only with Bramante’s never-completed “chonchra-vo” but also with the design principles of antique tomb monuments and capitals.<sup>374</sup> He is now so sure of his ability that on U 989A he applies Vitruvian standards to criticize the portal of the Vigna of Giovanni Gorizio, designed by the young Antonio while still entirely under Bramante’s influence.<sup>375</sup> On \*U 1846A he provides the portal of the Rocca of Civita Castellana with a pediment, which also had been designed by Antonio before 1514.<sup>376</sup> He also seems to have followed his own taste on some of the projects he drew for Antonio, at least in the details—most clearly seen in the plan U 1399A and probably also in the elevation U 201A for the Palazzo Ferrari, which he drew free-hand (in contrast to most of Antonio’s projects) and provided with perspectival optical aids.<sup>377</sup>

If we can thus hardly place Giovan Francesco among the most important architects of the Renaissance, he nevertheless belongs to that group of indis-

pensable spirits who stood tirelessly at the side of the greats and made an essential contribution to the knowledge of Antiquity.

Antonio’s brother Giovanni Battista was not born until 1496 and was certainly too young to have followed him to Rome as early as 1504.<sup>378</sup> Like Antonio himself, he too may have entered into training under his uncle Antonio the Elder and continued, from 1508 on, under Giuliano, who had then returned to Florence. After his brother and his cousins had begun such successful careers in Rome, his academic and artistic training probably became even more thorough. In any case, in contrast to his brother and his two uncles, in his early drawings Giovanni Battista already made use of a calligraphic script, as was used by Bramante, Raphael, and Peruzzi and at that time was becoming more and more widely diffused (Fig. 38b–e). The difference in the handwriting of Giuliano’s son Francesco, who was only two years older, mainly consists in the latter’s more squiggly g,<sup>379</sup> and thus it is even conceivable that the two youngest members of this talented family pursued their training together (Fig. 38a).

When in March 1513 a Medici became pope, it seemed that a Golden Age had finally dawned for the “setta sangallescica,” now expanded to at least seven masters. Giuliano and his brother returned immediately to Rome and certainly took Francesco and Giovanni Battista along with them. As early as 1513/14 Giovanni Battista delivered a measured representation of the entablature of the Temple of Castor and Pollux to his brother that far exceeded that of Bernardo della Volpaia in its precision.<sup>380</sup> It may have looked similar to U 1705A, distinguished from contemporary sheets by Giovan Francesco mainly by the abbreviation used for the *braccio*.<sup>381</sup> Although it is precisely the stylized calligraphy that renders attribution more difficult, as well as some dialect forms in the inscriptions that don’t seem Tuscan, Giovanni Battista remains to this day the most plausible author of design U 1320A for the facade of the Palazzo Farnese in Gradoli from around 1514/15 (Fig. 38b).<sup>382</sup> In its abstraction and its punctilious concession to perspective, with the unit of measurement drawn on the upper margin, this design stands in fact between Giuliano and Antonio the Younger, as one would expect of Giovanni Battista around 1515.<sup>383</sup> The two measured plans U 1358A and 2137A for the Palazzo Alberini, in whose planning also Giovan Francesco took part, both datable toward 1518, probably stem from the same calligraphic hand (Fig. 38c, d).<sup>384</sup> And this hand returns shortly after Raphael’s death on the garden design U 789A for the

Questa grosseza e una orauapente e Futra  
di questo capitello che e in san cosimo edami

a

Muro tra laltre cornion. finestre della sala  
et le finestre della sala. P. 9.  $\frac{3}{8}$ .  
P. 10.  $\frac{1}{2}$ .

b

Tutto questo quallo se come sul casa  
de la torre de miss Marcello d'andij

c

strada della Imagini 5141-

d

qua qualle  
out de simo  
istrome che ci  
sono

e

finestra sopra spazio del papa

f

inobarcava  
le colonne sonate  
p. 17

h

Ans 1526 die 19 Ap. 15  
Circuito de plantat facta fuora a la ca  
cto ali bastioni comen anulo a is. orio.

g

SITRACTA DELLE RAGIONI DELLA QVE  
THALIA miseria ungdellisege sanij disse apertamente el principio  
dibatte licoje e borignua. Erachio disse essere el fuoco: isacerdoti

i

38 Handwriting of Francesco di Giuliano and Giovanni Battista da Sangallo: a Francesco ca. 1514/15(?) (Cod. Vat. Barb. lat. 4424, fol. I v.)

Giovanni Battista: b ca. 1515(?) (U 1320A v.) c ca. 1518 (U 1358A v.) d ca. 1518 (U 2137A v.) e ca. 1520 (U 789A v.) f ca. 1523-25 (U 1319A v.) g 1526 (\*U 979A v.) h after 1534 (U 1657A v.) i 1546-48 (Vitruvius).

Villa Madama, up to now attributed to Francesco da Sangallo and secured for Antonio's workshop by virtue of Antonio's own annotations (Fig. 38e).<sup>385</sup> This sheet then forms the bridge to the design U 1319A for a window of the Sala Ducale from around 1521–24, the earliest drawing that can be attributed indubitably to Giovanni Battista on the basis of its calligraphic marginal comments (Figs. 38f).<sup>386</sup> The sheet also demonstrates what graphic virtuosity the twenty-eight-year-old had acquired in the meantime—a virtuosity whose mathematical precision eschews almost every personal note and thereby anticipates the style of Antonio's later working designs. The presumable designs of the previous years permit at least the suspicion that Giovanni Battista had an important share in Antonio's works from 1513 on, perhaps even more important than that of the less tractable Labacco and the more independent Giovan Francesco.

Giovanni Battista is documented as Antonio's assistant from 1521.<sup>387</sup> How close he must have stood to Giovan Francesco, whose drawings were attributed to him up to recent times, is shown by the roughly contemporary measurement of the garden portal of Johannes Goritz on U 1653A v.<sup>388</sup> But, while on U 989A the older Giovan Francesco considers Antonio's early work with practiced criticism, and Antonio himself then later apologetically added, "Non sta bene fu delle prime jo facesse non avevo anchora inteso vitruvio bene,"<sup>389</sup> Giovanni Battista contents himself with the laconic remark: "Credo penda troppo ancor secondo vitruvio." Strangely enough, the elevation of Antonio's "Imagine del Ponte," made not before 1524 on the verso, also has the character of a survey drawing, although Giovanni Battista must have had access to the project itself. Accordingly, Antonio's closest relatives and collaborators by no means limited themselves to blind following, but rather assessed his work on the Vitruvian standard and may thereby have contributed to his subsequent more intensive study of Vitruvius. Like Giovan Francesco, Giovanni Battista knew how to gain material advantage from his many connections, as when he appeared in the diocese of Montefiascone between 1521 and 1526 as an administrator for the Farnese.<sup>390</sup>

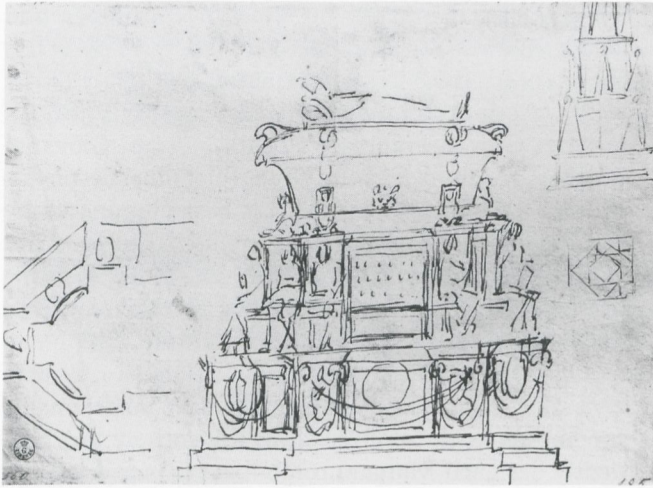
A valuable reference point for the development of Giovanni Battista's handwriting is the series of notes from 19 April 1526 on \*U 979A, which he made during a journey with Antonio to north Italian fortresses (Fig. 38g). In comparison to his script of the 1530's, but particularly to that of his Vitruvius translation and his letter to Paul III from ca. 1546, it appears more supple, rounded, and flowing.<sup>391</sup> The consistent and

occasionally mannered hooking of the upper and lower lengths—for example of the *f*, *g*, *q*, or *s*—is less pronounced. In short, its character is palpably closer to the inscriptions on U 789A and 1319A (Fig. 38e, f).

After Giovan Francesco's death in 1530, Giovanni Battista acquired a more powerful influence on his brother's design process. This is best illuminated by the studies for the tomb of Clement VII in S. Maria sopra Minerva from 1534 onward.<sup>392</sup> Antonio left the working-out of his sketch U 185A to Giovanni Battista—from the measurement of antique sarcophagi through to the clean copy U 183A (Figs. 39, 40). In general, Giovanni Battista seems to have made a name for himself with tombs such as the entirely independently designed Margani tomb of 1532 in S. Maria in Aracoeli, the only surviving work from his hand,<sup>393</sup> or the design U 186A for a freestanding monument, perhaps even that of Piero de' Medici, whose preparation he was in any case charged with at the time.<sup>394</sup> In all these projects, his somewhat drier and pedantic drawing style remains far behind his brother's with regard to figuration, although, as the complex motifs on \*U 1659A v. show, he must have occupied himself even with contemporary painting as in around 1534 with Michelangelo's preliminary studies for the *Last Judgment* or the *Fall of the Rebel Angels*.<sup>395</sup>

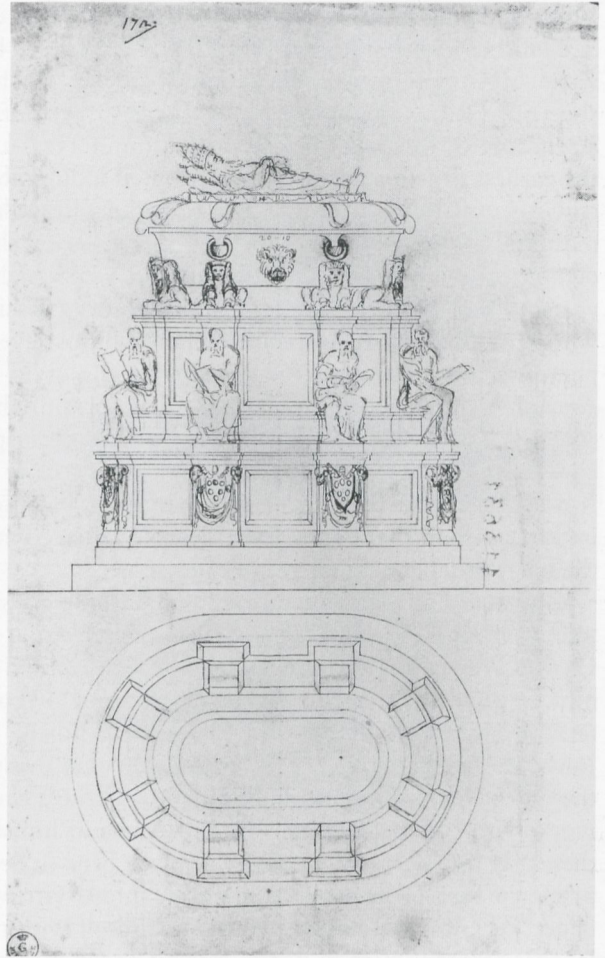
What burden of work fell to Giovanni Battista is shown alone by the great number of studies of antiquities that he prepared in close collaboration with Antonio, which in great part also landed in the latter's possession. A sure point of reference for their date, aside from the signature, is offered above all by the use of the *piede antico* after ca. 1525. This is not to say that all drawings measured with the *braccio* are to be dated before 1525, despite agreement on a conversion ratio of 1:2.<sup>396</sup> But the measurements of the Baths of Caracalla on U 1381A or the reconstruction of the Colosseum on U 1126A, 1856A, 1883A, and 3969A<sup>397</sup> can hardly be separated from Antonio's late studies on U 1135A, 1656A, and 4117A.<sup>398</sup> The same holds for the relationship of the measurements of the Theater of Marcellus and of the Forum Holitorium on U 626A, 1657A, and 1668A to Antonio's late studies on U 1090A, 1107A, 1122A, 1225A, 1233A, and 1270A.<sup>399</sup>

What sort of distance Antonio da Sangallo maintained with his younger brother—who was, as his nickname "il Gobbo" (The Hunchback) reveals, little favored by fate—is shown by the annotations on a few drawings of antiquities. Thus, for example, Giovanni Battista notes on U 1057A, the perspectival section of the entablature of the Basilica Aemilia: "questa



39 Antonio da Sangallo the Younger. Sketches for the tomb of Clement VII (U 1129A r.; after 1534).

40 (opposite) Giovanni Battista da Sangallo. Project for the tomb of Clement VII (U 183A r.).



e di mia mano non ne penso che sia bona io non o se non e di mia mano si che none so quale voi dite havermi date ma nonme ne richordo averne di vostra mano.”<sup>400</sup> Perhaps Antonio had believed his own measurement of this entablature made before 1510, which had disappeared in the meantime, was to be found in his brother’s possession.<sup>401</sup> The “voi” of the address itself argues for a dating of the sheet, at least of the annotation, in the period after 1520.

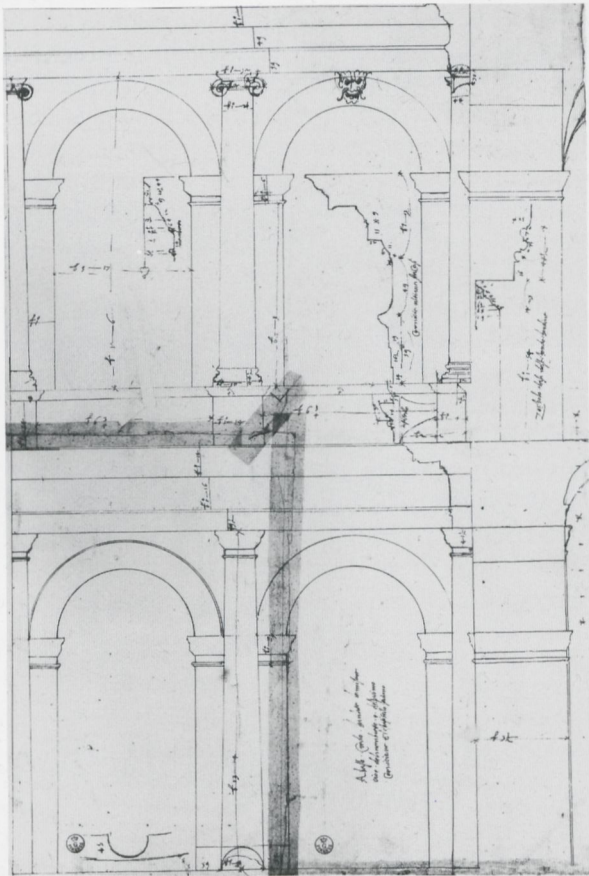
A similar process can be observed in the measurement of the Theater of Marcellus, where on U 1966A Giovanni Battista comments: “A basso credo havate le misure cioe del membretto e del primo cornicione el chapitello primo”(Fig. 41).<sup>402</sup> He may possibly be referring here to the survey drawings \*U 760A, \*761A, 932A, and 1296A, which can be attributed to Antonio del Tanghero in the years after 1517;<sup>403</sup> the drawings, by a pupil of Pietro Rosselli and thus another co-worker in the St. Peter’s construction crew, were already in Antonio’s possession and their schema obviously was borrowed by Giovanni Battista on U 1966A (Fig. 42). There Antonio the Younger converts Antonio del Tanghero’s measurements—noted in *palmi* and *dita* and thus hardly on Antonio’s orders—into *minuti*, that is, sixtieths of a *palm*, in order to be able to compare the proportions with Vitruvius’s rules.

That Antonio always held the threads of these ambitious studies in hand, and that Giovanni Bat-

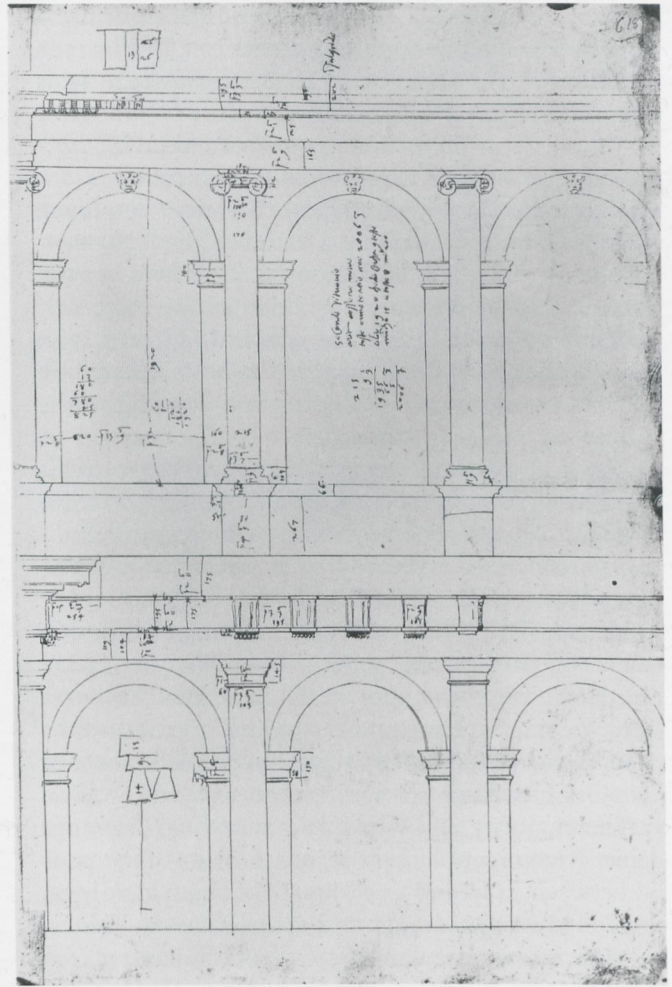
tista’s intellectual contribution was relatively minor despite all his training is proved by his own studies of Vitruvius, probably not begun until after his brother’s death.

A few unannotated clean drawings for projects of Antonio’s, such as U 836A for the Cappella Cesi, U 879A for the Cappella del Corpus Domini in Foligno, or \*U 914A, \*1256A, and \*4159A for the entrance of Charles V, may also be by Giovanni Battista.<sup>404</sup> Their detailed base zone, which Antonio himself usually omitted, recalls the clean drawings probably drawn by Giovanni Battista. Further, the difference between these and his spontaneous sketches is much sharper than in the case of the other members of his family. On the survey drawings of antiquities prepared on site, too, any sense for the aesthetic ordering of the sketches on the sheet is missing, that self-evident formal consciousness that particularly distinguishes Antonio’s and Giovan Francesco’s early sheets.

The role played in the Sangallo workshop by Gio-



41 Giovanni Battista da Sangallo. Elevation of the Theater of Marcellus (U 1966A r.; ca. 1525 forward).



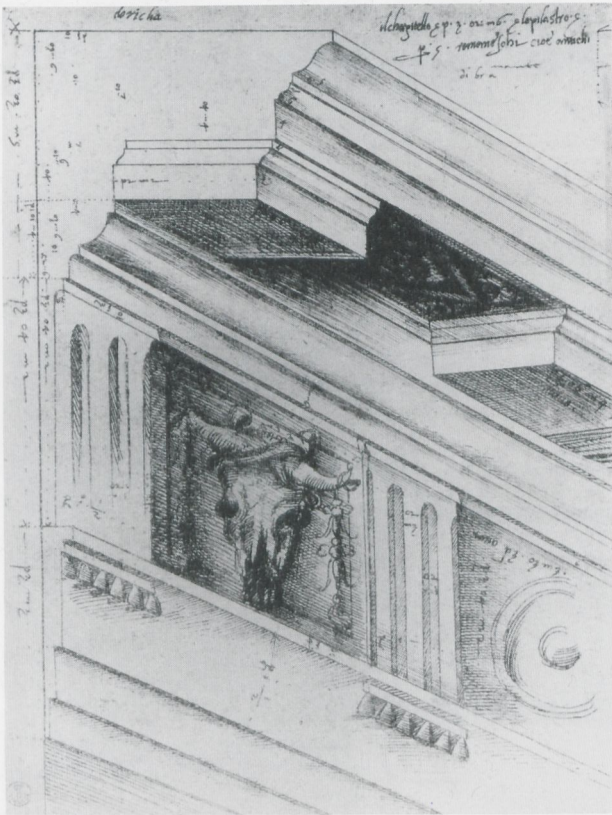
42 (opposite) Antonio del Tanghero. Elevation of the Theater of Marcellus (U 932A v.).

van Francesco's brother Sebastiano—who was born in 1481 and early in life acquired the epithet Aristotile because of his learned eloquence and physiognomy—is still unclear.<sup>405</sup> As assistant to Perugino, a friend of Ridolfo Ghirlandai's, the enthusiastic draftsman of the cartoon of Michelangelo's *Battle of Cascina*, and for a time even Michelangelo's assistant in the painting of the Sistine Chapel, he had decided initially to become a painter. With this goal in mind, probably about 1508, he began his initiation under Bramante into the secrets of perspective, especially of perspective stage design. Like Antonio and his brother, he undoubtedly lived at the time in Giuliano's house near St. Peter's, where he became involved with architecture: “. . . si diletto . . . nella sua giovinezza, come hanno fatto gli altri di casa sua, delle cose d'architettura, e con molta diligenza alle cose di prospettiva: nel che fare gli fu di gran comodo un suo fratello chiama-

to Giovan Francesco. . .”<sup>406</sup> Although Giovan Francesco was three years younger, he must have taken care of his brother until his own death in 1530. Not only did he facilitate his brother's access to architecture, perspective, and Antiquity, but he helped him in all material questions. Thus Aristotile's well-informed friend Vasari reports that Giovan Francesco entrusted to his brother the bookkeeping of his lucrative business in building materials, which he transacted together with the papal *provveditore* Giuliano Leno. In 1520 Aristotile succeeded Giovan Francesco as building supervisor of the Palazzo Pandolfini when the latter returned to Rome after a few months, and he was still assisting and representing Giovan Francesco in 1526–28 in the building lodge at St. Peter's.<sup>407</sup> According to Vasari, he had soon discovered that he was lacking the “invenzione” to become a painter and therefore decided “che il suo esercizio fusse l'architettura.”







44 Aristotile da Sangallo. Doric entablature “di bramante” (U 1739A r.).

Antonio’s only project connected with Giuliano’s son and heir, Francesco, born in 1494, is the latter’s drawing for the entry of Charles V into Rome in 1536 (\*U 1671A r.).<sup>418</sup> Already before the spring of 1509, when Francesco di Giuliano returned to Florence with his father, he must have taken an active part in the Roman art scene and made architectural drawings. After Giuliano’s return in the spring of 1513, Francesco became his most important collaborator, as his drawings in the *Libro* attest.<sup>419</sup> Two of them are copies after Antonio;<sup>420</sup> Antonio, for his part, seems to have copied the ground plan of the baptistery near S. Giovanni in Laterano from the *Libro* in 1514.<sup>421</sup> In general, the precision and orthogonal representation in these drawings—probably Francesco’s earliest—are closer to the method of his two cousins than to that of his father. Francesco thus could have played an important role in Giuliano’s turn toward the Bramante circle. Around 1518 he directed the enlargement of the entrance to the Baths of Diocletian, as he himself reports on U 284A.<sup>422</sup> The letter of 21 December 1538 on U 307A r., where Antonio not only explains

the orientation of the Pantheon, but also speaks about the care of his mother Smeralda and expresses the hope that his brother Giovanni Battista would also contribute his modest share to this end, must have been addressed to Francesco.<sup>423</sup>

Francesco di Giuliano is not, by the way, to be confused with Antonio’s younger brother Francesco, born around 1490, who is probably identical with the *soprastante* of the crew on site at St. Peter’s in 1521 and the master builder recorded in Rome after 1552.<sup>424</sup> His hand may be that of the as yet unidentified master who has been confused with both Giovanni Battista and Bernardo della Volpaia. Around 1520, he copied Raphael’s designs for his house on the Via Giulia on U 310A and 311A for Antonio.<sup>425</sup> Probably for Antonio as well, he drew the ground plan design U 980A for two row houses by Antonio del Bufalo.<sup>426</sup> After 1520, together with Peruzzi, he measured the column shafts of Old St. Peter’s on U 108A, 125A, 1079A–1084A, and 1851A (Fig. 45a).<sup>427</sup> As *soprastante*, Francesco was Antonio the Younger’s and Peruzzi’s immediate subordinate, which would explain both their collective measuring and Peruzzi’s comments on U 108A v., or Antonio’s comments on U 1084A. The measurements of the Forum Holitorium on U 3965A, which apparently were made after 1525 in connection with Sangallo’s survey, probably originate from the same hand.<sup>428</sup>

One of Antonio’s last and most capable collaborators was undoubtedly Bartolomeo Baronino, born in 1500.<sup>429</sup> His handwriting is secured by U 873A for S. Giacomo degli Incurabili from the period around 1540 (Fig. 45b).<sup>430</sup> As Antonio’s most important assistant, he was actively engaged at the same time on the planning of the second phase of construction of the Palazzo Farnese (Fig. 45c).<sup>431</sup> After Antonio’s death and before his murder in 1554, he would make his career as the designing architect of the Palazzo Capodiferro Spada and as the executive construction master of the Villa Giulia.

Other masters were connected with Antonio, such as Rinieri Neruccio da Pisa, Lorenzetti, and Pietro Rosselli, mainly through their activity for the construction crews at Loreto and at St. Peter’s. The highly talented Lorenzetti, shortly after the death of his teacher Raphael, asserted himself as an independent architect of the Caffarelli and della Valle Capranica palaces and can be documented as *soprastante* of the crew on site at St. Peter’s from 1540.<sup>432</sup> The sensible drawing U 1572A, probably made under Paul III, which is secured for him by his handwriting on the verso, shows him completely independent of the

queste sia sotto intesa  
 di maximo qda ubi di dua  
 per: sipo lano vidua e tutte  
 anna mifua  
 Striata di dua ter  
 Striata fino al terzo int  
 43 D 2 1/2      43 D 2 1/2

a

Sito della strada  
 l'altro lo baronino no s'ha no

b

4. 1. 6. 7. a 4. 20 del pde l'ano 1540  
 Scala di 4. 1. 6.

c

<sup>155</sup>  
 adi 11 delugio 1541  
 legimare domoniali  
 4. 5. lavorano opoli re le colone  
 puto sabato e 55 em ali 6  
 detto 4. 17. la giornata

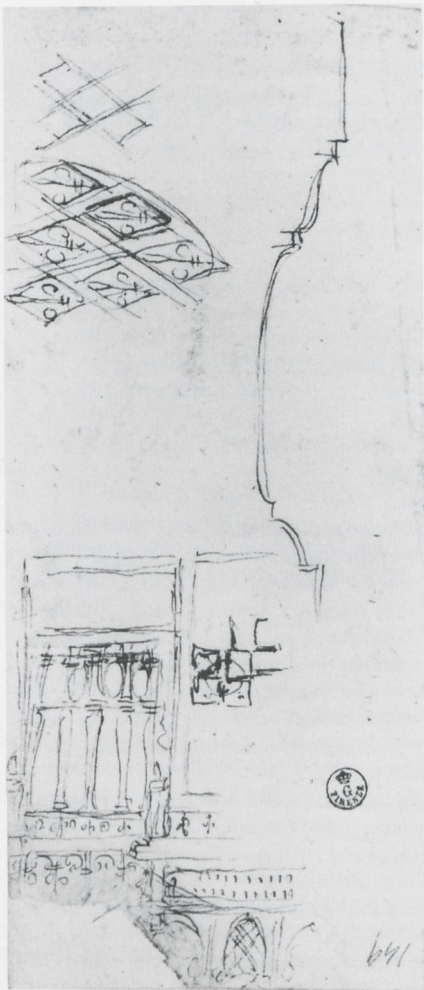
d

giornata 2 Str mo  
 ut mo — 4. 0. 9  
 giornata 3 > 1/2 8  
 11 ? giornata  
 40 ————— 13-2  
 □  
 □ □ □ □  
 3-0.6  
 8-3.6  
 10-22

e

45 a Francesco di Bartolommeo da Sangallo(?), columns of Old St. Peter's (U 1082A v.; 1520 forward), detail  
 b B. Baronino, handwriting (U 873A r.; ca. 1540) c B. Baronino, project for the staircase of Palazzo Farnese  
 (U 1769A r.; ca. 1540)

L. Lorenzetti, handwriting: d 1541 (Archivio della Rev. Fabbrica di S. Pietro) e 1534 forward (U 1572A v.).



46 L. Lorenzetti. Project for balustrade and niche decoration (U 1572A r.; 1534 forward).

Sangallo circle (Figs. 45d, e; 46).<sup>433</sup> A series of other draftsmen from Antonio's intimate circle, whose sheets he commentated personally, remain to be identified.<sup>434</sup>

After Bramante's death the most important architects of the High or Late Renaissance passed directly or indirectly through the school of Antonio da Sangallo the Younger, as is proved alone by Vignola, Alessi, and Palladio. Even Giacomo della Porta, Carlo Maderno, Borromini, Bernini, and Carlo Rainaldi are indebted to him. Thus he marks one of the great points of intersection in the history of architecture—no matter how one may judge this or that project. And thus the present corpus not only presents the historian with insights into the methods and ideals of an epoch long past, it may also indicate for those who create today a way to their most powerful roots.<sup>435</sup>

## NOTES

For all frequent titles, see the Reference List following the Notes.

1. Ragghianti Collobi 1973; Ragghianti Collobi 1974, p. 4ff.
2. B. Friedrichs kindly provided me with the reference to Percier's reconstruction of the Villa Madama at the Institut de France (Ms 1009, p. 27, fig. 42).
3. C. Percier and P.F.L. Fontaine, *Palais, maisons et autres édifices modernes dessinés à Rome*. . . (Paris, 1798); P.M. Letarouilly, *Edifices de Rome moderne*. . . (Paris, 1849–66).
4. Letarouilly, *Edifices de Rome*, text, p. 257ff.; P.M. Letarouilly, *Le Vatican et la Basilique de Saint-Pierre de Rome* (Paris, 1882; published from the posthumous papers by A. Simil).
5. See n. 1.
6. G.B.L.G. Seroux d'Agincourt, *Storia dell'arte col mezzo dei monumenti*, II (Milan, 1825), p. 140, pl. 72, no. 24.
7. Gaye, III, 391ff. On the history of the Gabinetto dei Disegni in general, see A. Forlani Tempesti, "Il Gabinetto dei Disegni e delle Stampe degli Uffizi" (with bibliography), *Musei e Gallerie d'Italia* 41–42 (1970): 37–59.
8. C. Ravioli, *Notizie sui lavori di architettura militare sugli scritti o disegni editi ed inediti dei nove da Sangallo*. . . (Rome, 1863), p. 31ff.
9. A. Jahn, "Die Sammlung der Handzeichnungen italienischer Architekten in der Galerie der Uffizien zu Florenz," *Jahrbuch für Kunstwissenschaften*, ed. A. von Zahn, 2 (1869): 143–54; G. Vasari, *Le vite*. . . , ed. F. Le Monnier, XI (Florence, 1854), pp. 23–86; Vasari-Milanesi, V, pp. 475–552.
10. Jahn, see n. 9.
11. C. Pini and G. Milanesi, *La scrittura di artisti italiani (sec. XIV–XVII)* (Florence, 1876).
12. A. Guglielmotti, *I Bastioni di Antonio da Sangallo disegnati sul terreno per fortificare e ingrandire Civitavecchia l'anno 1515* (Rome, 1860).
13. Jakob Burckhardt, *Briefwechsel mit Heinrich von Geymüller*, ed. C. Neumann (Munich, 1914).
14. H. von Geymüller, *Architektur und Religion* (Basel, 1911), p. 109f.
15. H. von Geymüller, *Notizen über die Entwürfe zu St. Peter in Rom aus bis jetzt unbekanntem Quellen* (Karlsruhe, 1868); Italian translation in *Il Buonarroti* 3 (1868): 170–76, 215–23.
16. See, for example, D. Frey, *Bramantes St. Peter-Entwurf und seine Apokryphen* (Vienna, 1915); B. Degenhart, "Dante, Leonardo und Sangallo," *Römisches Jahrbuch für Kunstgeschichte* 7 (1955): 101–292; H. Saalman, "Die Planung Neu St.-Peters," *Münchener Jahrbuch der bildenden Kunst*, 40 (1989): 103–40.
17. H. von Geymüller, *Die ursprünglichen Entwürfe für Sanct Peter in Rom* (Vienna, Paris, 1875–80); Geymüller, *Raffaello Sanzio studiato come architetto* (Milan, 1884); Geymüller, "Documents inédits sur les manuscrits et les oeuvres d'architecture de la famille des San Gallo. . . ," *Mémoires de la Société nationale des Antiquaires de France* 45 (1885): 1–31.
18. *Inventario. 2. Disegni esposti*, ed. A.M. Petrioli-Tofani (Florence, 1987), p. 479ff.
19. H. Thelen, *Francesco Borromini: Die Handzeichnungen*, I (Graz, 1967).
20. Lotz 1977, p. 31f.
21. See the bibliography in Bruschi 1983, in addition to the bibliography of this corpus.
22. On Michelangelo's attitude to his own drawings, see M. Hirst, *Michelangelo and his Drawings* (New Haven, London, 1988), pp. 16–21.

23. Look, for example, at a drawing such as U 1199A for the courtyard of Palazzo Farnese (Frommel 1981, p. 135ff., fig. 21).
24. Frommel 1973, II, p. 5; Pagliara, in Frommel/Ray/Tafari, p. 181; Günther 1988, pp. 60, 62, 171, 265, 322ff.
25. See below, p. 36f.
26. Frommel, in Frommel/Ray/Tafari, pp. 330f., 338; on Sangallo's annotations, see also Giovannoni, p. 20ff.; Günther 1988, p. 316f.
27. Frommel 1973, II, p. 118.
28. Wolff Metternich 1972, fig. 53; Frommel, in Frommel/Ray/Tafari, p. 288f.
29. Frommel, in Frommel/Ray/Tafari, pp. 245ff., 266.
30. Giovannoni, p. 10.
31. Frommel 1973, II, p. 329f.; E. Bentivoglio, in Frommel/Ray/Tafari, p. 130; Frommel, *ibid.*, pp. 330f., 360ff.; Wolff Metternich/Thoenes, pp. 13ff., 52f.; Antonio's inscription on U 6A v., "Opinione e disegno Di fraiocondo per santo pietro De roma" (*ibid.*, fig. 52), may still go back to the time before 1530.
32. Frommel, in Frommel/Ray/Tafari, p. 226ff.; Wolff Metternich/Thoenes, p. 81ff.
33. Wolff Metternich/Thoenes, p. 73ff.; Frommel 1989, pp. 161-68.
34. In any case, we would like to assume this from Antonio's annotations, which seem to have been added after 1527 (e.g., U 1163A, 1329A, 1372A, 1377A, 1852A; Bartoli, pp. 76, 93, 98, 101, figs. 413, 499, 534, 553). It is nevertheless conceivable that these sheets reached Antonio during Giovan Francesco's lifetime; see below, p. 40.
35. Giovannoni, p. 399f.; see below, p. 43ff.
36. Golzio 1936, p. 176.
37. Raggianti Collobi 1974, pp. 53, 57, 97f., 101ff., 111f., 127, 136, 138f., 149, 150ff., 156.
38. *Ibid.*, pp. 102f., 127.
39. A. Ravioli, "Antonio da Sangallo il Gio.," *Atti e Memorie della RR. Deputazioni di Storia per le Provincie Modenesi e Parmensi* 2 (1864): 14f.; Günther 1988, p. 24.
40. Frommel 1981, p. 145ff., below in this volume, pp. 75-80 (Giess).
41. See below, pp. 61-74 (Adams and Pepper).
42. *Ibid.*
43. A. Bertolotti, "Nuovi documenti intorno all'architetto Antonio da Sangallo (il Gio.) e alla sua famiglia," *Il Buonarroti*, ser. 3, 4 (1890-92): 280f.; Frommel 1973, II, p. 293.
44. Gaye, III, p. 391ff.; Giovannoni, p. 9; Günther 1988, p. 244.
45. See below, pp. 61-74 (Adams and Pepper).
46. See above, p. 1.
47. Ravioli (see n. 8), pp. 12f., 32ff.
48. *Ibid.*, pp. 32, 34.
49. *Vitruvii de architectura libri decem*, ed. C. Fensterbusch (Darmstadt, 1964), pp. 11, 20ff.
50. Frommel 1983, p. 154f.
51. Tigler, p. 141ff. (with bibliography); exhibition catalogue, *Les bâtisseurs des cathédrales gothiques*, ed. R. Recht (Strasbourg, 1989), p. 227ff.
52. Schofield, pp. 120-31 with sources and bibliography.
53. *Ibid.*, p. 123ff.
54. Degenhart/Schmitt, cat. 38, 54; Schofield, p. 128.
55. Degenhart/Schmitt, cat. 11f.; Schofield, p. 128.
56. Lotz 1956, p. 194, fig. 1.
57. Degenhart/Schmitt, I, p. 204ff.
58. *Ibid.*, I, p. 94.
59. Schofield, p. 130f.
60. Lotz 1977, p. 3ff.
61. A. Manetti, *The Life of Brunelleschi*, ed. H. Saalman (University Park, Pa., 1970), p. 124f.; Italian edition, ed. D. De Robertis and G. Tanturli (Milan, 1976), p. 122.
62. *Ibid.* (1970), p. 64ff.; Günther 1988, p. 22ff.
63. S. Borsi, p. 348ff.
64. Tigler, p. 146.
65. *Ibid.*, p. 149ff.
66. *Ibid.*, p. 165ff.
67. H. Saalman, "Gio. di Gherardo da Prato's designs concerning the cupola of S. Maria del Fiore in Florence," *Journal of the Society of Architectural Historians* 18 (1959): 11-20.
68. Lotz 1977, p. 4ff.; Alberti, ed. P. Portoghesi, IX, p. 856ff.
69. Alberti, I, 1, p. 18f.
70. *Ibid.*, II, 1, p. 96ff.
71. *Ibid.*, IX, 10, p. 856ff.
72. *Ibid.*, IX, 10, p. 860f.
73. *Ibid.*, II, 1, p. 98f.
74. H. Burns, "Un disegno architettonico di Alberti e la questione del rapporto fra Brunelleschi ed Alberti," in *Filippo Brunelleschi. La sua opera e il suo tempo*. Acts of the International Congress, Florence, 1977 (Florence, 1980), p. 105ff.; F. Borsi, *Leonbattista Alberti* (Milan, 1975), pp. 133, 207; Günther 1988, p. 105; on the interpretation of the drawing for Alberti's first buildings, see also H. Ettliger, "The sepulchre on the facade: a re-evaluation of Sigismondo Malatesta's rebuilding of S. Francesco in Rimini," *Journal of the Warburg and Courtauld Institutes* 53 (1990): 133-43; Schofield, p. 122f.
75. A. Lepik, "Das Architekturmodell in Italien von 1353 bis 1500," Ph.D. diss., Augsburg, 1989; Günther 1988, p. 67ff.
76. G. Scaglia, *Checklist and History of Francesco di Giorgio's Manuscripts and Drawings* (Bethlehem, Pa., 1992), p. 53ff.
77. Günther 1988, p. 29ff., figs. 15-17, 20-23.
78. Frommel 1993.
79. Tönnemann, p. 88ff.; P.N. Pagliara, "Grottaferrata e Giuliano della Rovere," *Quaderni dell'Istituto di Storia dell'Architettura*, n.s. 13 (1989): 32, rightly calls Giuliano the "principale erede delle teorie albertiane attivo in quel momento [i.e., before 1500]."
80. S. Borsi, p. 41ff.; Tönnemann, p. 90ff.
81. S. Borsi, F. Quinterio, C. Vasic Vatovec, *Maestri fiorentini nei cantieri romani*, ed. S. Danesi Squarzina (Rome, 1989), p. 156ff.
82. *Filippo Brunelleschi 1377-1446. La Renaissance de l'architecture moderne*, ed. Direction de l'Architecture (Paris, 1978), fig. 121; S. Borsi, p. 108f.
83. See below, p. 14.
84. S. Borsi, pp. 267ff., 286ff., 292ff.; Günther 1988, p. 128ff.; see below, p. 16.
85. S. Borsi, p. 254ff.
86. See below, p. 15.
87. S. Borsi, p. 40; Günther 1988, p. 230.
88. For the various fascicles of the *Libro*, see S. Borsi, p. 116ff.; for the dating of the *Libro Piccolo* before 1508, *idem*, p. 115; A. Nesselrath, "Codices e Vaticanis selecti phototypice expressi, vol. XXXIX," *Zeitschrift für Kunstgeschichte* 52 (1989): 284ff.
89. S. Borsi, pp. 423ff., 472ff.; Frommel 1986, p. 284; F. and S. Borsi, p. 316ff.
90. Günther 1988, p. 118.
91. *Ibid.*, p. 121ff.; see below, p. 21.
92. *Ibid.*, p. 123ff.; see below, p. 9.
93. S. Borsi, pp. 453ff., 481ff.

94. Günther 1988, p. 137.
95. *Ibid.*, pp. 123ff., 193f., 199ff., 252.
96. S. Borsi, p. 257; Günther 1988, p. 123f.
97. F. and S. Borsi, p. 160ff.
98. Frommel 1991 ("Bramante," Düsseldorf).
99. C.L. Frommel, "Il progetto del Louvre per la Chiesa dei Fogliani e l'architettura di Cristoforo Solari," in *Quaderno di studi sull'arte lombarda dai Visconti agli Sforza. Per gli 80 anni di Gian Alberto Dell'Acqua*, ed. M.T. Balboni Brizza (Milan, 1990), pp. 52–63.
100. S. Borsi, pp. 423ff., 453ff.
101. Schofield, p. 131ff.
102. Pedretti, p. 23; Schofield, p. 131ff.
103. H. Burns, in Frommel/Ray/Tafari, p. 420f.
104. Vasari 1550, p. 596.
105. Frommel 1989, pp. 161–68.
106. Frommel 1991 ("Bramante," Naples); Frommel ("St. Peter's").
107. See below, p. 18ff.
108. Frommel ("St. Peter's").
109. Frommel 1993.
110. Vasari 1550, p. 865ff.; Vasari 1568, p. 313; Giovannoni, p. 91; Bruschi 1983, p. 4
111. Satzinger, pp. 131f., 161ff.
- 111a. *Ibid.*, p. 116.
112. *Ibid.*, p. 164.
113. Marchini, p. 84ff.; Tönnemann, pp. 17ff., 108ff.; S. Borsi, p. 14ff.; H. Biermann, "Palast und Villa: Theorie und Praxis in Giuliano da Sangallo Codex Barberini und im Taccuino senese," in *Les Traités d'Architecture de la Renaissance*, ed. J. Guillaume (Paris, 1988), pp. 138–50.
114. Satzinger, p. 131f.
115. G. De Angelis D'Ossat, p. 100.
116. Florence, Biblioteca Nazionale, Cod. Magl. XVII.20, fol. 3 v.; A. Gotti, *Vita di Michelangelo Buonarroti narrata con l'aiuto di nuovi documenti* (Florence, 1875), II, p. 179; Giovannoni 1959, p. 395ff.; Günther 1988, p. 243f.; Satzinger, p. 78f.
117. Jobst, p. 140. From this earliest document of Antonio's Roman activity, the important passages for the present work are: ". . . Sebastianus quondam marcj de giano de sangallo de florentia et antonius bartolomej etiam de sangallo carpentarij in civitate lavinia prope palatium apostolicum" owe the Roman citizen Martino de Alpino from Rione S. Eustachio 47 ducats "ex causa pretij venditionis certi lignaminis videlicet tabularum trabium et travicellorum ac diversarum lignaminum ab eodem martino habiturum. . . de mense martij tempore accessus et reditus smi.dni.nri.pape ad urbem ex civitate bononie que lignamina dicti sebastianus et antonius. . . habuerant etc pro conficiendo certo arco triunfali ad gloriam laudem et ornatum dicti s.d.n.. Actum in civitate lavinia prope palatium apostolicum in apoteca dictorum sebastiani et antonij presentibus rafaello berti del sarto de florentia architectore johanne francisco quondam johannis de florentia alias tirib. . . carpentario et joanne jacobus rusmini [?] de adinis [?] de caravagio ferrario testibus" (ASR, Coll. Not. Cap., v. 60, fol. 81 r.).
118. Vasari 1550, p. 630.
119. Marchini, p. 96. Since the Rocca di Nettuno was apparently begun in 1501—that is, about the same time as the Rocca di Civita Castellana—it was most likely designed by Antonio da Sangallo the Elder.
120. G.L. Hoogewerff, "Documenti, in parte inediti, che riguardano Raffaello ed altri artisti contemporanei," *Atti della Pontificia Accademia Romana di Archeologia, Rendiconti* 21 (1945/46), p. 262, docs. 10, 11; the payment in the spring of 1509 to a stonemason named Giuliano is certainly related to Giuliano del Toccio (Fabriczy, p. 11); payments for Antonio's work on the papal bark were not made until April 1510 (Frey, p. 16, doc. 71; cf. Giovannoni, p. 385).
121. C.L. Frommel, "Eine Darstellung der 'Loggien' in Raffaels 'Disputa'. Betrachtungen zu Bramantes Erneuerung des Papstpalastes in den Jahren 1508/09," in *Festschrift Eduard Trier zum 60. Geburtstag* (Berlin, 1981), pp. 113ff., 121f.
122. Frommel 1973, p. 41, pl. 186a, b; Frommel 1981, p. 114, figs. 7, 8. Antonio could conceivably have participated in the execution of the richly decorated coffered ceiling in the papal bedroom, which—like the window aedicules of the Cortile del Papagallo—could go back to Giuliano's design (see C.L. Frommel, "Disegno und Ausführung: Ergänzungen zu Baldassarre Peruzzi's figurealem Oeuvre," in *Kunst als Bedeutungsträger*. Commemorative volume for Günther Bandmann [Berlin, 1978], p. 216, fig. 2; Frommel 1984, p. 124f.). Giuliano may have been in Rome again between December 1507 and February 1508 (*Il carteggio di Michelangelo*, ed. B. Barocchi and E. Ristori, I [Florence, 1965], pp. 57, 61).
123. In his securely attributed buildings and projects, Giuliano also frequently used richly decorated entablatures and consoles with no load-bearing function.
124. See below, p. 23.
125. Giovannoni, pp. 69, 104; L. Bianchi, *La Villa Papale della Magliana* (Rome, 1942), p. 39ff., pl. 9ff. The detail of a fireplace on the verso also speaks for a reworking and, like the geometric studies, is the work of the young Antonio. So far, Bramante's participation in the Magliana before 1513 has not been proved (M. Dezzi Bardeschi, "L'opera di Giuliano da Sangallo e di Donato Bramante nella fabbrica della villa papale della Magliana," *L'Arte* 4 [1971]: 111–73). It is conceivable, however, that immediately after Giuliano's departure, Bramante assumed responsibility and entrusted Antonio with the execution. Giuliano's samples of an inscription for Julius II in the *Taccuino senese* probably date from the first years of his pontificate (see S. Borsi, p. 467).
126. Marchini, p. 97.
127. Giovannoni, p. 343ff.; Frommel 1986, p. 265; Satzinger, p. 119f.
128. Fabriczy 1902, p. 23.
129. On 17 June 1512 Sangallo purchased from the papal builder Giorgio da Coltre—who also owned the neighboring house and had perhaps built up these narrow parcels on the new street on speculation—for 70 ducats "certam domum principiatam sine solarijs et tecto cum muris comunibus ab utroque latere. . . latitudinis quatuor cannarum versus viam publicam et longitudinis XI cannarum scilicet a dicta via usque ad partem posteriorem versus flumen tiberis in conspectu montis de austa prope sanctum roccum." The property owed taxes to S. Maria del Popolo (ASR, vol. 60, fol. 632; Frommel 1973, II, p. 298). The sketch for a ground plan on U 7975A r., which could date from about 1512/13, is perhaps connected with the completion of these houses.
130. Satzinger, p. 78.
131. Frommel 1986, p. 283f.
132. Bruschi 1983, p. 3ff.; Frommel 1986, p. 264ff.; cf. Degenhart, pp. 273–78, figs. 365–375. Among his attributions to Antonio, only that of U 2046A is correct.
133. For a similar change in Peruzzi's early handwriting, see Frommel 1993.
134. Ferri, p. XL f.; Fabriczy, p. 111f.; Bartoli, p. 30ff., figs. 145–154, 393–396, 401f.; Giovannoni, p. 383; Vasari, no. 119f.; S.

- Borsi, 495–99; Günther 1988, p. 113f.
135. Fabriczy 1902, pp. 104, 111f.; Ashby, pp. 19, 21; Egger, p. 161f.; Huelsen, pp. xx, 15f.; Bartoli, pp. 31f., 74; Vasori, p. 28ff.; S. Borsi, pp. 71, 214f., 497; Günther 1988, pp. 257, 313.
136. See above, p. 6f.
137. Lotz 1956, p. 199ff.
138. S. Borsi, pp. 284f., 332.
139. U 1555A r. and v., 1576A r. and v., 1627A v., 2043A r. and v.; Bartoli, cf. S. Borsi, fig. 495ff.; Günther 1980, p. 113f., fig. 3f.
140. S. Borsi, p. 254ff.; Günther 1988, p. 123ff., figs. 9f., 18, 23.
141. Francesco da Sangallo's later copies on fol. 43 v. of the *Libro*, in S. Borsi, p. 214f.
142. See below, p. 26f.
143. Vasori, p. 153ff.; Günther 1988, p. 114, fig. 6.
144. See below, this page.
- 144a. H. Saalman (see n. 16), p. 226, fig. 20.
145. Huelsen, text, p. 4; Letarouilly 1846 (see n. 3), p. 88, fig. 63.
- 145a. Bartoli, p. 31, fig. 150.
146. Bartoli, p. 31, fig. 153; Günther 1988, p. 113, n. 87.
147. Degenhart/Schmitt, I, pp. 2, 478–82, Teil 4, pls. 327–336, cat. nos. 434, 435, 463; Günther 1988, p. 27, fig. 11.
148. S. Borsi, pp. 124, 140.
149. Idem, pp. 50, 84f., 91, 93, 196, 224, 230; see above, p. 7f.
150. See above, p. 8f.
151. See below, p. 47ff.
152. Ghisetti Giavarina, p. 70, cat. 17.
153. F. and S. Borsi, p. 317ff.
154. Ghisetti Giavarina, p. 72, cat. 26.
155. Ibid.
156. Frommel 1989; see above, p. 9.
157. Günther 1988, appendix I, pls. 1–12.
158. Frommel 1993, p. 150ff.
159. Wolff Metternich/Thoenes, p. 81ff., figs. 94, 98.
160. Ibid., p. 118, fig. 121f.
161. Bartoli, p. 35, fig. 178f.; Bartoli's attribution to Antonio the Elder can be ruled out on the basis of his handwriting alone (fig. 21b, o); his secured drawings in Günther 1988, p. 114f., fig. 7, and Satzinger, fig. 69. I owe the sample of his handwriting of 1508 to R. Paciani.
162. Wolff Metternich/Thoenes, p. 94ff., fig. 100.
163. Bartoli, pp. 97, 126, figs. 525, 722; Günther 1988, pp. 199f., 378, fig. 35f.
164. For Sangallo's system of measurement, see Günther 1988, pp. 174f., 184f.; above, p. 8.
165. Buddensieg, p. 108.
166. Lotz 1977, p. 19f.; S. Borsi, p. 197f.; see above, p. 8.
167. See below, p. 24.
168. Pastor, IV, part 1, p. 737f.
169. R. Tuttle, "Julius and Bramante in Bologna," in A. Emilian, ed., *Le arti a Bologna e in Emilia dal XVI al XVII secolo*, Atti del XXIV Congresso C.I.H.A., Bologna, 1979 (Bologna, 1982), 3ff.; see above, p. 11.
- 169a. On 20 October 1506, a "magister Antonius florentibus" was paid "per fare aconciare lo aromario de' libri del coro. . . et per lo telajo dello altare de Sancto Jo [hanni?] apresso lo campanile" (Rome, Archivio degli Agostiniani, Sagr. S. Agostino [1505–18, fol. 12v.]). If "magister Antonius" is identical with Antonio the Younger, he would have remained in Rome during these months.
170. See below, p. 22.
171. Ferri 1885, p. 120.
172. Lotz 1977, p. 4, fig. 1; Francesco di Giorgio Martini, *Trattati di architettura*, ed. C. Maltese (Milan, 1967), pl. 221f.; Pedretti, fig. 83f.; Günther, Appendix I, pl. 1.
173. Wolff Metternich/Thoenes, p. 165ff., fig. 164f.
174. Bruschi 1969, p. 387, fig. 251.
175. Frommel/Ray/Tafuri, pp. 135, 167, 280, 333f.
176. S. Borsi, pp. 196, 205, 254, 260; Günther 1988, p. 73ff., fig. 5ff.
177. Frommel 1993, fig. 31.
178. For U 226A, see Wolff Metternich/Thoenes, p. 190, fig. 189.
179. S. Borsi, p. 423ff.
180. See above, p. 8; the sketch on \*U 1552A for the fortification of the church, which is close to the work of the young Sangallo, may also date from that time (S. Borsi, p. 509f.).
181. Wolff Metternich/Thoenes, p. 170ff., fig. 169; S. Borsi, 196.
182. Cf. Scaglia 1992 (see n. 76), p. 167ff.
183. Bartoli, p. 65, fig. 245; see below, p. 26f.
184. Bartoli, p. 73, fig. 391; for the dating of Giovan Francesco's copy on U 1716A r. (Bartoli, p. 101, fig. 555) in 1514–20, see below, p. 42.
185. See above, p. 11.
186. See above, p. 5.
187. C.L. Frommel, "Il cantiere di S. Pietro prima di Michelangelo," in J. Guillaume, ed., *Les Chantiers de la Renaissance. Actes des colloques tenus à Tours en 1983–1984* (Paris, 1991), p. 180, fig. 8f.
188. Frommel 1976, p. 67f.
189. Ibid., p. 120f.
190. Vasari 1550, p. 867.
191. On the fate of Raphael's and thus probably also Bramante's architectural drawings, see K. Oberhuber, *Raphaels Zeichnungen Abteilung IX*. . . (Berlin, 1972), p. 18f.
192. Frommel, in Frommel/Ray/Tafuri, pp. 256f., 294f.; Günther 1982, p. 81f. With its diameter of ca. 29 p., this vault is much smaller than those of St. Peter's.
- 192a. See Frommel ("St. Peter's").
193. Frommel 1986, p. 265, fig. 3.
194. Bartoli, p. 65, fig. 343; Wolff Metternich 1972, p. 55f., fig. 82, who relates the sketch to the "beam construction of the emergency roof carried out in 1542"; cf. C. Thoenes in Wolff Metternich/Thoenes, p. 194; Frommel ("St. Peter's").
195. Bartoli, pp. 71f., 83, figs. 381, 386f., 446, 449f.; Wolff Metternich 1972, p. 65, fig. 119, with an attribution to Sangallo and B. della Volpaia; the explanatory inscriptions on the recto were added—as in so many cases—by Antonio only later.
196. Frommel, in Frommel/Ray/Tafuri, p. 258; Wolff Metternich/Thoenes, p. 169ff.; Frommel ("St. Peter's").
197. Bartoli, p. 71, fig. 376f.; Günther 1988, p. 47f.
198. H. Günther, "Das Trivium vor Ponte S. Angelo. Ein Beitrag zur Urbanistik der Renaissance in Rom," *Römisches Jahrbuch für Kunstgeschichte* 21 (1984): 180. In the few preserved drawings of the period before 1515, in which Antonio used the abbreviation for the *palm* romano, he always put a crossbar on the tail of the *p* (this essay, fig. 7b; Frommel 1973, pl. 177d; Frommel 1981, fig. 23f.); thereafter until ca. 1520 this abbreviation turns up only occasionally (idem, fig. 35; Frommel/Ray/Tafuri, figures pp. 285f., 293, 335), and Antonio prefers a *p* with an upper stroke (Frommel 1981, figs. 21, 27, 29).
199. See above, p. 12.
200. Frommel 1986, p. 262ff.

201. Bartoli, pp. 75, 88, figs. 407, 468f.; Jobst, p. 123f., which can be dated more precisely in 1512/13 on the basis of the script; U 2055A is not by Antonio the Younger.
202. Vasari-Milanesi, VI, p. 434f.
203. For the building policy of Leo X, see Tafuri in Frommel/Ray/Tafuri, p. 76ff.; C.L. Frommel, "Papal policy: The planning of Rome during the Renaissance," in R.I. Rotberg and T.K. Rabb, eds., *Art and History: Images and Their Meaning* (Cambridge, 1988), p. 55ff.; Günther 1988, p. 56ff.; Tafuri, p. 97ff.
204. A. Bruschi, in F. Cruciani, *Il teatro del Campidoglio e le feste romane del 1513* (Milan, 1968), p. 158ff.; Günther 1988, pp. 174, 338.
205. Frommel 1986, p. 271ff.
206. See Raphael's complaint in his letter of 1519/20 to Leo X (Golzio, p. 83).
207. Günther 1985; Frommel, *Palazzi Romani* (in press).
208. Frommel 1986, p. 280ff.
209. Frommel, in Frommel/Ray/Tafuri, p. 325f.; C.L. Frommel, "Villa Lante e Giulio Romano artista universale," in *Giulio Romano*. Atti del Convegno Internazionale di Studi, Mantua, 1989 (Mantua, 1991), p. 130. On the basis of the inscriptions and handwriting alone, Antonio's project on U 1283A (Bartoli, p. 84, fig. 452), which directly recalls \*U 1484A v., must be dated before 1517. G.A. della Rovere, prior to 1512-16, had already leased large parts of the Forum of Augustus to Marcantonio Cosciari, with the obligation to spend 400 ducats "in reparatione dicti palatii" (Lanciani, I, p. 185f.; J. Delaville Le Roux, "Liste des prieurs de Rome de l'ordre de l'hôpital de S. Jean de Jerusalem," in *Mélange G.B. De Rossi* [Rome, 1892], p. 268; Günther 1988, p. 254). The property reached "usque ad parietes magnos iuxta viam publicam ab uno latere, ab alio vicum protendentem ad ortum dicti prioratus. Item totam et integram partem terminatam a dictis parietibus magnis et a prefata via ab alio ortu dicti prioratus." The three "columnne magne" could not be touched. In addition, Cosciari took responsibility "facere stratam seu viam pro orto ipsius d. prioris iuxta arcum hoc (sancti Basilii) et ecclesiam sancte Marie de Angelis," evidently a small church situated near the Curia (R. Lanciani, *Forma urbis Romae* [Rome, 1893-1901], pl. 22). For S. Croce in Gerusalemme, see C.L. Frommel, "Progetto e archeologia in due disegni di Antonio da Sangallo il Giovane per Santa Croce in Gerusalemme," in S. Danesi Squarzina, ed., *Roma, centro ideale della cultura dell'Antico nei secoli XV e XVI*. . . (Milan, 1989), pp. 382-89.
210. Golzio, p. 282.
211. Günther 1988, pp. 172ff., 336ff.
212. See below.
213. Günther 1988, pp. 337f.; Wolff Metternich/Thoenes, p. 93, fig. 97; see above, p. 26.
214. Günther 1988, p. 173.
215. Bruschi 1969, figs. 218, 220f.
216. Buddensieg, p. 90ff.; Günther 1988, p. 200. Antonio's calculation on the verso of U 3966A, which Buddensieg (*idem*, p. 95) convincingly attributed to Bernardo, may be even a little earlier. It would confirm a collaboration during Bramante's lifetime. Obviously, Bernardo translated this orthogonal elevation for the Codex (fol. 64) into his particular perspective.
217. See below, p. 43.
218. Günther 1988, p. 336ff.
219. See above, p. 23.
220. Günther 1988, p. 338.
221. *Ibid.*, p. 296.
222. Frommel, in Frommel/Ray/Tafuri, p. 358.
223. See below, p. 30ff.
224. Frommel 1986, p. 268ff.
225. *Ibid.*, p. 266f.
226. Frommel 1973, II, p. 25, pl. 14b. For the dating of the Palazzo Baldassini in 1514, see Frommel 1983, p. 138.
227. Giovannoni, p. 307f., fig. 24; Frommel 1973, I, p. 77. This design must have been made at any rate before the palace was confiscated in the summer of 1517, probably even soon after 1512, when Antonio was working on the Cancelleria and when, as especially the three-quarter columns indicate, he was still close to Bramante and studying the Arch of Titus (see above, p. 24). Antonio could only have inscribed such a presentation drawing afterward. For this phase in the construction of the Cancelleria, see Frommel, *Palazzi Romani del Rinascimento*; for U 1320A, see below, n. 382.
228. Frommel 1983, p. 134ff., fig. 22.
229. *Ibid.*, p. 138ff., fig. 23f.
230. Bartoli, p. 69, fig. 365.
231. Denker Nesselrath, pp. 8-45.
232. Wolff Metternich/Thoenes, p. 165ff., fig. 164f.
233. Frommel 1983, p. 153. The pre-1527 dating is based on the early form of the *h*; the logogram for *palm* points to the period before 1520 (see n. 198).
234. Frommel 1973, II, pp. 183, 227, pls. 75, 177d.
235. Frommel 1983, p. 276, fig. 25; see there the unpersuasive conclusion that Giovan Francesco's remarks on the verso point to a date after 1516. In Antonio's U 4163A, one probably has to view his accompanying ground plan for the Palazzo del Monte provided with many *botteghe*.
236. Frommel 1986, p. 269ff.
237. *Ibid.*, p. 277ff.
238. K. Frey 1910, p. 56.
239. Frommel, in Frommel/Ray/Tafuri, pp. 23ff., 214ff.
240. J. Shearman, *ibid.*, p. 116.
241. Frommel 1973, II, p. 168ff.; Ray, in Frommel/Ray/Tafuri, p. 119ff.
242. Bentivoglio, in Frommel/Ray/Tafuri, p. 130f.
243. Frommel, *ibid.*, p. 135.
244. Tafuri, *ibid.*, p. 167ff.; Frommel 1986, p. 275f.
245. Shearman, in Frommel/Ray/Tafuri, p. 323f.
246. Frommel, *ibid.*, p. 270ff.; Frommel 1986, p. 280ff.
247. Frommel, in Frommel/Ray/Tafuri, p. 266.
248. *Ibid.*, pp. 248, 267, 274f.
249. *Ibid.*, p. 276ff.
250. *Ibid.*, p. 268ff.
251. *Ibid.*, p. 311ff.; Frommel 1986, p. 288ff.
252. Frommel, in Frommel/Ray/Tafuri, p. 333f.
253. C. Thoenes, "La 'lettera' a Leone X," in *Raffaello a Roma*. Acts of the Congress, Rome, 1983 (Rome, 1986), pp. 373-81 (with bibliography).
254. Golzio, p. 83.
255. "Questa era lentrata principale di questa terme laquale io francesco di giuliano da sangallo feci iroma lanno 1518" (Günther 1988, p. 199f., fig. 35). The original form of the entrance is indicated by Peruzzi on U 574A (Wurm, p. 425).
256. ". . . quendam locum vulgariter nuncupatum el barco situm Rome in loco terme diocletiani cui ab uno pars cohoptertum dictarum termarum ab alio via publica ab alio platea seu campus dictarum termarum ab alio vinea domini ascanii de sacchis de perusio. . ." Ascanio, who owned the "barcho," leased it on 7 May 1522 to Cardinal Innocenzo Cibo, a nephew of Leo X, for 50 gold ducats a year (Rome, Archivio Capitolino, sez. LXVI, vol. 40, fol. 84 r.).

257. Golzio, p. 83f.
258. See above, pp. 8f., 18f.
259. See E. Maddaleni Capodiferro's elegy on the death of Raphael: ". . . Reddebat te ipsam tibi, tot regionibus, Umber, Dimensis, portis, moenibus atque viis . . ." (Golzio, p. 80).
260. Ibid., p. 113. For the census of the *regiones*, see F. Albertini, *Opusculum de mirabilibus novae et veteris urbis Romae* (Rome, 1510), fol. K.
261. Thus, his interpretation of Santa Croce as a "templum etruscum" (U 899A) is related to his work on Santa Croce in ca. 1520 (see n. 209); his plan U 949A of the Alexandrine Baths (Bartoli, p. 92, fig. 491) to the project for a palace for Enckevoirt; his drawing of Trajan's Column, U 1153A, to the construction of S. Maria di Loreto (Bartoli, p. 85, fig. 458); his survey drawing of obelisks on U 1172A to urbanistic plans (Günther 1985, p. 289); and his plan U 1283A to a project for a villa for M.A. Cosciari (see n. 209).
262. See below, p. 45f.
263. Cf. Thoenes 1986 (see n. 253), p. 375f.; Günther 1988, p. 252ff.
264. P.N. Pagliara, "La Roma antica di Fabio Calvo. . .," *Psicon* 8/9 (1976): 65–87; P.N. Pagliara, in *Raffaello in Vaticano* (Milan, 1984), p. 92ff.; P.J. Jacks, "The Simulacrum of Fabio Calvo: A view of Roman architecture all'antica in 1527," *Art Bulletin* 72 (1990): 456f.
265. Bartoli, p. 110ff., figs. 616–629; Frommel 1976, p. 73; Vasori, p. 189ff.; Günther 1982; K. Weil-Garris Brandt, "Michelangelo's Pietà for the Cappella del Re di Francia," in *Il se rendit en Italie. Etudes offerts à André Chastel* (Rome, Paris, 1987), p. 98, n. 77, fig. 3, with the important comment that the project for moving the Vatican obelisk mentioned on U 4335A refers to Paul II and thus makes it possible to date the group considerably earlier; see above, p. 23.
266. Frommel 1993, p. 150ff.
267. See below, p. 47ff.
268. Frommel 1973, II, p. 17; Frommel 1987, p. 181.
269. For instance, his views of the Cancelleria on fol. 10 r. of Cod. Icon. 195, of Antonio's first model for St. Peter's on fols. 2 v. and 3 v., or of the Cortile del Belvedere on Windsor 10496.
270. Cod. Icon. 195, fols. 7 r., 10 v., 11 r. and v.
271. Ibid. For the attribution of this design to Giulio Romano, see Tafuri in catalogue, *Giulio Romano* (Milan, 1989), pp. 45, 302.
272. H. Nachod, "A recently discovered architectural sketchbook," *Rare Books* 8, 1 (New York, 1955); Frommel 1973, II, p. 6; S. Storz, in Frommel/Ray/Tafuri, p. 418ff. (Storz is preparing a critical edition of the sketchbook); C.L. Frommel, "Il progetto di Domenico da Varignana per la facciata di S. Petronio," *S. Petronio*. Acts of the Congress, Bologna, 1990 (in press).
273. See above. The surveys of the baths of Diocletian and Constantine (?), drawn by the same procedure, presuppose Bramante's and Antonio's surveys of 1506/7 (A. Nesselrath, "I libri di disegno di antichità. Tentativo di una tipologia," in *Memoria dell'antico nell'arte italiana*, ed. S. Settis [Turin, 1986], p. 107f.).
274. *Giulio Romano* (see n. 271), p. 288ff. The partially perspectival "TENPIO GRECHO" on U 131A, inspired by the Baths of Diocletian, is reminiscent in its pictorial shading of Raphael's late stage set (Frommel, in Frommel/Ray/Tafuri, p. 225ff.) and probably stems from the period after 1520, as the statues indicate (cf. Günther 1988, p. 128; S. Borsi, p. 502ff.).
275. Günther 1988, p. 203ff.
276. Ibid., appendix IV, pls. 32a, 39a.
277. Frommel 1993, p. 150ff.
278. Günther 1988, pl. 62ff.
279. Wurm; Frommel 1993.
280. See, for instance, Wurm, pp. 456, 458ff., 466, 469 f., 473, 477f.
281. Frommel 1993, p. 150ff.
282. Wurm, pp. 141f., 173, 193f., 214, 224, 237, 246, 315, 338, 353, 361, 487, 512.
283. Frommel 1993, p. 149.
284. C.L. Frommel, "Baldassare Peruzzi als Maler und Zeichner," *Beiheft des Römischen Jahrbuches für Kunstgeschichte* 11 (1967–68): 24; Wurm, p. 494.
285. Frommel, in Frommel/Ray/Tafuri, p. 286.
286. Ibid., p. 277f.
287. Giovannoni, pp. 205ff., 214ff., 232ff., 254ff.; Tafuri, in Frommel/Ray/Tafuri, p. 217ff.; Frommel 1986, p. 295ff.; Jobst, p. 50ff.; M. Tafuri, "Due progetti di Antonio da Sangallo il Giovane per la chiesa dei Fiorentini a Roma," in *Architettura storia e documenti*, 1987, pp. 35–52; Tafuri in vol. 2 of the present corpus. On this occasion Antonio probably also designed the projects on U 502A, which he derived from his designs for St. Peter's (Tafuri, in Frommel/Ray/Tafuri, p. 217).
288. K. Frey 1910, p. 63ff., Günther, p. 252ff., who probably gives too early a date for the beginning of this collaboration.
289. Frommel 1986, p. 278, n. 61; Günther, p. 254, fig. 14.
290. Giovannoni, figs. 75, 200; Frommel, in Frommel/Ray/Tafuri, figure p. 283; Frommel 1987, p. 173f.
291. Giovannoni, figs. 133, 137; R. Wittkower, "Michelangelo's Laurenziana," *Art Bulletin* 16 (1934): 161, fig. 26.
292. Giovannoni, figs. 48, 154.
293. Ibid., fig. 34.
294. Bartoli, p. 964, figs. 521–524; Günther 1988, p. 378 (with the attribution of U 1656A and 4117A to Giovanni Battista). Antonio's U 1133A (Bartoli, p. 96, fig. 520) corresponds to the state of knowledge of ca. 1514, as is shown by a comparison with B. della Volpaia's plan (Günther, V, fig. 36). This early survey drawing was in any case adequate as a model for the exedrae of the garden loggia of the Villa Madama (H. Burns, in Frommel/Ray/Tafuri, p. 392). Not only the analytical character of the more mature sheets, but also the parallels to Peruzzi's drawings from Antiquity suggest a date after 1520 and before 1528 (cf. Günther, p. 252ff.).
295. Günther, figs. IV, 8, V, 13, VII, 6, 7, Pt. 2, 6b, 13, 16a, 29b, 30, 72a, 73, 106–111, fols. 32v.–34 of the Codex Mellon (see n. 372), or the survey drawings of the Raphael circle (J. Shearman and A. Nesselrath, in Frommel/Ray/Tafuri, 418ff.; for the Pantheon drawings of the Sangallo circle see vol. 3 of this corpus).
296. Bartoli, pp. 77, 83, figs. 378ff., 449. The relationship of the measures in *palmi* on U 1191A r. (this essay, fig. 22), the copy after Menicantonio's survey drawing of the colossal interior order (see above, p. 23), to the measures in *braccia* on Giovan Francesco's approximately contemporary drawing U 85A v. is particularly revealing. A twelfth of a *palm* is replaced by two-sixtieths of a *braccio*, thus one *palm* equals two-fifths of a *braccio*, whereby for the sake of simplicity any degree of imprecision over 5 percent is accepted. Apparently, Antonio corrected Giovan Francesco's U 85A v. with the more precise measures that he took from his own measurement U 1387A r.; on the dating of Giovan Francesco's drawing, see below, p. 42.
297. See U 1157A v. (Bartoli, p. 65, fig. 344; Günther 1988, p. 298, both without mentioning the verso): "In prima misurare tutto lo di sopra e vedere quanto e dalla chornicie di marmo a quello di mattonj / vedere dentro le finestre quanto e dalla chornicie alla



soglia / e quanto dalla chornicie di sopra a quella delle finestre / larchitrave di dentro / vedere chome sachorda lo piano dentro chon quello del porticho / vedere la chornicie della porta chome safro / ta cho chornicie che gira dentro / vedere chome safronta cholla chornicie del porticho / quella della porta / misurare le spaliere nelle chapelle / schizare le feste che sono tra pilastri / misurare la chornici del portichale dentro e fuora / e misurare lo frontespitio / schizare li chontraforti sopra lentrata / misurare la chornicie e fregio della porta / misurare quanto sono e quadri primj e chosi li pettorali / misurare quanto e alto insino in terra"; cf. the corresponding questions on U 1299A r. (Günther 1988, p. 271).

298. Bartoli, pp. 71f., 83, figs. 381, 386f., 446, 449f.

299. H. Burns, "A Peruzzi Drawing in Ferrara," *Mitteilungen des Kunsthistorischen Institutes in Florenz* 12 (1966): 245-70; Wurm, pl. 473; see above, p. 33.

300. T. Buddensieg, "Criticism and Praise of the Pantheon in the Middle Ages and the Renaissance," in *Classical Influences on European Culture A.D. 500-1500* (Cambridge, 1971), p. 265f.; on Antonio's criticism of antique triumphal arches, see C. Jobst, "Die kritischen Studien nach antiken Triumphbögen von Antonio da Sangallo dem Jüngeren. Das Verhältnis von Säulenordnung und Mauerwerk," *Annali di architettura* 2 (1990): 45ff.

301. Bartoli, pp. 73f., 76, figs. 388, 414.

302. Frommel 1983, p. 154ff.; Frommel 1991 ("Bramante," Düsseldorf).

303. Giovannoni, figs. 71, 72, 76, 190, 199, 204, 207, 230.

304. *Ibid.*, fig. 88f.

305. *Ibid.*, fig. 85; see above, p. 19.

306. See above, p. 28f.; Frommel 1991 ("Bramante," Düsseldorf).

307. Giovannoni, p. 90.

308. See below, pp. 61-74 (Adams and Pepper).

309. The earliest samples of the altered handwriting are found on the plan U 836A, dated by the notes on the verso to 1530, for the Cesi Chapel (Giovannoni, p. 379, fig. 229), in the foreword to the Vitruvius Commentary, dated to the beginning of 1531 (see p. 11) and in the drawings of an antique find, \*U 1212A, dated after 1 April 1531. The designs U 968A, 969A, 1074A, 1116A for the Palazzo Pucci and \*U 958A for the Cappella dei Tre Magi in Orvieto may even be placed back in the time around 1528/29 (Giovannoni, p. 294ff., figs. 299ff., 343).

310. The list on \*U 1344A r., dated November 1526, betrays the luxury of his new domestic quarters, the like of which he, as a frugal bachelor, would hardly have imagined for himself (compare \*U 1484A).

311. Bartoli, p. 71, fig. 376f; see above, p. 20.

312. Frommel 1981, figs. 21-29.

313. For Antonio's studies of Vitruvius, see especially P.N. Pagliara, "Studi e pratica vitruviana di Antonio da Sangallo il Giovane e di suo fratello Giovanni Battista," in *Les Traités d'Architecture de la Renaissance*, ed. J. Guillaume (Paris, 1988), pp. 179-206, as well as Pagliara in vol. 3 of this corpus. Of the Vitruvius studies discussed by Pagliara, only U 903A is in the handwriting of the period before 1527, but closer to 1525-27 than earlier (idem, p. 190, fig. 14). Antonio there compares Fra Giocondo's interpretation of the Doric frieze on the left half of the sheet with that of "lovechio" on the right. By the "old one" he perhaps means Fabio Calvo, born 1450, who translated Vitruvius's treatise into Italian for Raphael (V. Fontana and P. Morachiello, *Vitruvio e Raffaello. Il "De Architectura" di Vitruvio nella traduzione inedita di Fabio Calvo, Ravennate* [Rome, 1975]). When Antonio

described Durantino's 1524 translation of Vitruvius, in his late handwriting, as his own copy, adding to the full name his position and the year 1520 ("architetto del papa 1520"), he was probably documenting his appointment as first papal architect (Pagliara 1988, p. 185). The almost identical inscription in his lost Vitruvius edition of 1513 and in other books in his possession probably should be interpreted similarly; Ravioli (see n. 8), p. 34; Pagliara 1988, p. 184ff.

314. Giovannoni, p. 23; the *piede antico* used here and its subdivisions apparently are based on Giovan Francesco's tables on U 1427A r. (Günther 1988, pp. 227, 229), which he had drawn up around 1514-20 on the basis of antique sources.

315. On the use of the *braccio fiorentino* and *piede antico* and their exact correspondence, see Günther 1988, p. 225ff. Oddly enough, on the survey drawing of obelisks, datable toward 1520, he calculates the *piede* as  $4^{24}/_{420}$  of a *braccio fiorentino*, while, on the later U 1427A v., he overlooks this small difference of 1 percent.

316. "Lo mezo disegno di termine longo b[raccia] 700 piedi 1400 / Le piante grande si mettono al libro secondo queste misure / Lo coliseo longo alto b[raccia]  $85\frac{1}{4}$  b[raccia] 333 p[iedi] 666 / La ritonda alta b[raccia] 75 longa b[raccia] 140 [in the margin] li templi con questa / La colonna storiata alta b[raccia] 66 / [here in the margin] li archi con questa" (Günther 1988, p. 227); on Antonio's Vitruvius commentary, see P.N. Pagliara in vol. 3 of this corpus.

317. Also among the assistants of the 1530's was the stonemason Rinieri Neruccio da Pisa, who as Loretan construction director was Antonio's subordinate (see above, p. 33). Thus in 1535 Sangallo copied Rinieri's survey drawing of the Temple of the Sibyls in Tivoli (Günther 1988, 206ff., figs. 2, 6)—albeit without trusting every detail. Otherwise he would not have measured the building once again four years later on U 1216A, when he also came up with divergent figures (idem, p. 241). For his part, if he is identical with the "Italiener C," Rinieri copied Antonio's new survey drawing of the Baths of Caracalla after 1527 (idem, p. 341, pl. 35f.).

318. See, for example, U 1074A and 116A for the Palazzo Pucci from 1528 onward (Giovannoni, fig. 303 F), \*U 1092A and 1224A of ca. 1535 for his house on the Via Giulia (idem, figs. 309, 312), or \*U 745A from ca. 1537 for Castro.

319. See below, p. 42.

320. See below, pp. 81-97 (Scaglia).

321. Giovannoni, figs. 229ff., 299ff., 309, 314f., 344.

322. *Ibid.*, figs. 66-69, 375; Frommel/Ray/Tafari, p. 253.

323. See, for example, Giovannoni, fig. 83.

324. Schofield, p. 121ff.

325. See, for example, U 702A, 703A, \*750A, 868A, 878A, 877A, 925A, \*1087A, \*1092A, \*1269A, 1363A, 1365A, 1368A (Giovannoni, figs. 10, 139, 145, 176, 179, 200, 208, 210, 228, 231, 309, 327, 329).

326. Cf. J.S. Ackerman, "Architectural Practice in the Italian Renaissance," *Journal of the Society of Architectural Historians* 13 (1954): 3-11.

327. Particularly, the detail studies for the Palazzo Farnese (Frommel 1981, figs. 23, 29, 32, 33, 35) and for St. Peter's (Frommel, in Frommel/Ray/Tafari, pp. 268f., 274ff.)

328. Thus also U 1320A for the Palazzo Farnese in Gradoli or U 252A and 122A for St. Peter's (Frommel/Ray/Tafari, pp. 267, 286).

329. Thus Labacco's engraving of Antonio's central plan project for S. Giovanni dei Fiorentini may derive from a wooden model (Tafari, in Frommel/Ray/Tafari, p. 222f.; Frommel 1986, p. 296, n. 142); Schofield, p. 121ff.

330. Giovannoni, p. 143ff.; Frommel, in Frommel/Ray/Tafari,

pp. 299–302.

331. Giovannoni, fig. 121.  
332. J.S. Ackerman, *The Architecture of Michelangelo*, 5th ed. (Chicago, 1986); G.C. Argan and B. Contardi, *Michelangelo architetto* (Milan, 1990).  
333. Frommel 1973, pl. 138a, b.  
334. Pagliara 1988 (see n. 313).  
335. On Antonio's workshop, see especially Giovannoni, p. 96ff.  
336. Frommel 1986, p. 279f., n. 70; on Labacco's *Libro*, see idem, p. 283, n. 88; Günther 1988, p. 248ff.  
337. Frommel 1986, p. 279f.  
338. Ibid.; cf. Vasori, p. 189.  
339. Buddensieg, p. 95; Günther 1988, p. 248.  
340. Günther 1988, pp. 261, 272ff., 282, figs. 23, 39ff., 54f.; see p. 45.  
341. Ibid., p. 249ff., fig. 8.  
342. Ibid., fig. 10.  
343. Ibid., p. 272, fig. 42.  
344. Ibid., p. 257ff., fig. 22.  
345. See above, p. 12.  
346. Frommel 1986, p. 296, n. 142.  
347. Giovannoni, p. 244.  
348. See above, p. 35.  
349. Günther 1988, p. 65.  
350. On Giovan Francesco, see Frommel 1973, II, p. 362; Buddensieg, p. 104f.; Frommel 1986, p. 276, n. 55; C.L. Frommel, "Giovanfrancesco da Sangallo, architetto di palazzo Balami-Galitzin," in Spagnesi, ed., *Antonio da Sangallo*, p. 63ff.; Günther 1988, pp. 127, 296ff., 338; Frommel 1991, p. 181.  
351. Vasari-Milanesi, VI, p. 435.  
352. Bartoli, pp. 69, 83, 99, 101ff., figs. 369, 446, 550, 553, 561, 563, 571; Günther 1988, pp. 125f., 257, 296ff.  
353. Günther 1988, p. 127, n. 144; see above, p. 17.  
354. Bartoli, p. 23f., fig. 98; cf. S. Borsi, p. 144ff.; Günther 1988, p. 115, n. 104.  
355. Bartoli, p. 99, fig. 540; for U 85A, see above, p. 23.  
356. Cf. Günther 1988, p. 296ff.  
357. Frommel/Ray/Tafari, figures pp. 178, 222, 327; as on U 909A for the aedicule of S. Giacomo (Giovannoni, p. 244), one also finds Giovan Francesco's handwritten comments on U 1898A v. for the Torre del Monte, without, however, the occurrence there of the *ch* (Frommel 1973, p. 125f.; Frommel 1986, p. 276, n. 55; this essay, fig. 33d).  
358. Bartoli, pp. 93f., 99, 101, 106, figs. 499, 540, 553, 584.  
359. Ibid., p. 100, fig. 545.  
360. See above, p. 30.  
361. Frommel 1986, p. 296ff.  
362. Bartoli, p. 101ff., figs. 553, 556, 570.  
363. On Sangallo's house near S. Rocco, see above, n. 129.  
364. Bartoli, p. 99, fig. 537.  
365. See above, n. 315.  
366. See above, p. 19.  
367. Buddensieg, p. 108; F.E. Keller in vol. 3 of this corpus.  
368. See above, p. 36.  
369. For the palace of B. da Parma, see B. Adorni, "Progetti e interventi di Pier Francesco da Viterbo, Antonio da Sangallo il Giovane e Baldassarre Peruzzi per le fortificazioni di Piacenza e di Parma," in Spagnesi, ed., *Antonio da Sangallo*, p. 365ff.; since this project has not as yet been dated, nothing prevents an earlier dating.  
370. Giovannoni, figs. 189, 191, 286; Frommel 1973, II, pp.

- 30ff., 175ff., pls. 17a, b, 71a, b; Frommel 1986, p. 298f., n. 149.  
371. Bartoli, pp. 95, 99f., 102, figs. 507ff., 539, 541, 545, 559; Vasori, pp. 161–72, 175ff.  
372. Günther 1988, p. 297.  
373. Bartoli, p. 95, fig. 508; see P.N. Pagliara in concluding volume of this corpus.  
374. Frommel, in Frommel/Ray/Tafari, p. 361; Günther 1988, p. 297.  
375. Giovannoni, pp. 11, 26, fig. 50; Günther 1988, p. 297.  
376. See above, p. 23.  
377. See above, p. 42.  
378. P.N. Pagliara, "Cordini, Giovanni Battista," *Dizionario Biografico degli italiani* 29 (Rome, 1983), pp. 23–28; P.N. Pagliara, "Sangallo, (Giovanni) Battista," *Macmillan Dictionary of Architecture* (New York, 1992), with further bibliography.  
379. S. Borsi, p. 44 (upper half).  
380. See above, p. 27.  
381. Bartoli, p. 102, fig. 562.  
382. Frommel 1973, I, p. 133, pl. 167b; F.E. Keller, "Residenze estive e 'ville' per la corte farnesiana nel Viterbese nel '500," in *Farnese dalla Tuscia Romana alle Corti d'Europa*. Acts of the Congress, Caprarola, 1983 (Viterbo, 1985), p. 74ff; F. Fagliari Zeni Buchicchio, "Contributo all'attività di Antonio da Sangallo il Giovane a Civitavecchia, Gradoli e Castro," in Spagnesi, ed., *Antonio da Sangallo*, p. 250ff. That here we are not dealing with a drawing of the consolidation phase of the years 1537/38, as formerly suspected, but rather with a design from the time of the beginning of construction, is demonstrated mainly by the deviant measurements of the windows and the different sizes of the corner bosses. These, as well as the low upper story, still correspond stylistically to the Palazzo Baldassini of ca. 1514 (Frommel 1973, pl. 10a), while the small-block rustication carried out above the socle story on the side facing the valley is found in Antonio's buildings from the time after 1515 such as the Palazzo Farratini in Amelia (M. Bertoldi, M.C. Marinozzi, L. Scolari, C. Varagnoli, "Note sul palazzo Farratini ad Amelia," in Spagnesi, ed., *Antonio da Sangallo*, pp. 297–308) or the upper part of the ground floor of the Palazzo Farnese (Frommel 1973, pl. 41a). If on U 1320A there are two references to preexistent walls, this means simply that older construction material was integrated, as the documents as well as the asymmetrical and completely atypical plan witness. It remains to be determined whether dialect forms such as "fazzata" or "cornione" on U 1320A can be attributed to a Florentine.  
383. On Giuliano's drawing of Brunelleschi's S. Maria degli Angeli, see above, p. 6. The plan U 1285A, which Antonio later provided on the verso with a purely classificatory inscription ("faciate per diversi palazi e case"), and which was possibly intended for the palace of Cardinal Francesco Soderini in Borgo Nuovo, is likewise abstracted and could also have been drawn by the young Giovanni Battista (Giovannoni, pp. 49f., 322). Francesco's palace facade, drawn significantly later in a similar technique on U 1772A, provides support for the idea that we have here to do with a specifically Florentine mode of representation.  
384. Frommel 1973, II, p. 5, pl. 6a, b; Pagliara, in Frommel/Ray/Tafari, p. 179ff.  
385. Frommel, in Frommel/Ray/Tafari, p. 322, figure p. 317.  
386. Giovannoni, p. 67; D. Redig de Campos, *I Palazzi Vaticani* (Bologna, 1967), p. 120f.  
387. Pagliara 1983 (see n. 378), p. 24.  
388. Ibid.  
389. Giovannoni, p. 26, fig. 50; see above, p. 43.  
390. I owe this information to F. Fagliari Zeni Buchicchio.

391. P.N. Pagliara, "Alcune minute autografe di G. Battista da Sangallo," *Architettura Archivi* 1 (1982): 25-50.
392. Pagliara 1992 (see n. 378).
393. Pagliara 1983, p. 25; Pagliara 1992 (see n. 378).
394. Pagliara 1983, p. 25; Pagliara 1992 (see n. 378).
395. Not one of the motifs coincides with Michelangelo's known studies.
396. See above, p. 36.
397. Bartoli, pp. 93, 96f., figs. 493-497, 520f., 526f.
398. Bartoli, pp. 94, 97; figs. 503f., 529-531; Günther 1988, p. 261ff., figs. VII, 19, 50.
399. Bartoli, p. 77ff., 80f., figs. 417f., 433-438; Günther 1988, p. 377, figs. 26, 84, 82.
400. Bartoli, p. 98, fig. 533.
401. See above, p. 22.
402. Bartoli, p. 97, fig. 532; Vasori, p. 174f.; Günther 1988, p. 377.
403. Bartoli, p. 62, figs. 335-338; Giovannoni, p. 67, fig. 45f.; Günther 1988, pp. 231, 298; on the attribution of these sheets to Tanghero, see G. Scaglia, "Antonio del Tanghero's work in Rome in 1518 with Pietro Rosselli, Michelangelo Buonarroti, and Antonio da Sangallo il Giovane," *Antichità Viva*, 1992.
404. Giovannoni, pp. 239, 379, fig. 229.
405. Ghisetti Giavarina.
406. Vasari-Milanesi, VI, p. 434.
407. C.L. Frommel, "Palazzo Pandolfini," in *Atti del Convegno Internazionale Raffaellesco*, Florence, 1984, ed. M. Sambucco Hamoud and M.L. Strocchi (Florence, 1987), p. 201.
408. Vasari-Milanesi, VI, p. 437.
409. Ghisetti Giavarina, p. 177f.
410. *Ibid.*, p. 23ff.
411. Vasari-Milanesi, VI, p. 449.
412. Ghisetti Giavarina, cat. 1, 2, 6-9, 11-13, 45, 49f., 56, 73, 97; the author's attribution of most of these drawings to Tommaso Boscoli is not convincing.
413. *Ibid.*, cat. 4, 38f., 76f., 91ff.; see above, p. 18.
414. *Ibid.*, cat. 7.
415. Bartoli, p. 107, fig. 593; Vasori, p. 179ff.; Ghisetti Giavarina, cat. 35.
416. Ghisetti Giavarina, cat. 8.
417. *Ibid.*, cat. 37, 43, 48, 59, 61, 67f., 78, 82ff., 86, 95.
418. Ragghianti Collobi 1973, p. 73, fig. 87. On Francesco da Sangallo, see Degenhart, p. 256ff.; A.P. Dadd and R. Roisman, "Francesco da Sangallo: a rediscovered early Donatellesque 'Magdalen' and two wills from 1574 and 1576," *Burlington Magazine* 129 (1987): 784-92, with Francesco's testaments, in which, however, only "modelli" are mentioned.
419. Borsi, figure p. 44 (compare Antonio's U 2047A v.; see above, pp. 8, 17) and figure p. 215 (compare U 1627A r.; see above, n. 141); for his part, Antonio had access to Giuliano's *Libro*. Compare, for example, \*U 1665A r. and v.: "spoglia cristi dal libretto di Giuliano"; Vasori, p. 172ff.; Günther 1988, p. 857.
420. *Libro*, fols. 1v, 43 (S. Borsi, pp. 44, 213ff.; see above, p. 17, n. 141).
421. S. Borsi, p. 202f.; Frommel 1973, II, p. 118, pl. 50b.
422. See above p. 30. He may also have drawn sheets such as U 930A (Bartoli, p. 80, fig. 431), where the cursive script differs from Giovanni Battista's drawings of antiquities by the squiggly g and the abbreviation for the *braccio*.
423. Bartoli, p. 65, fig. 342; Günther 1988, fig. VII, 86.
424. De Angelis D'Ossat; Pagliara 1983 (see n. 378), p. 23. Francesco's hand is certainly represented among those drawings

Antonio preserved that have yet to be identified.

425. Frommel 1973, II, p. 264ff., pl. 110; Tafuri, in Frommel/Ray/Tafuri, p. 236ff.
426. Giovannoni, p. 322, with outline in fig. 20.
427. Bartoli, pp. 54, 104, figs. 295ff., 574; Wurm, p. 117f.
428. Bartoli, p. 109, fig. 603f.; cf. Peruzzi's probably later copy on U 477A r. (Günther 1988, p. 282, fig. 52).
429. J. Hunter, "The 'Architectus Celeberimus' of the Palazzo Capodiferro at Rome," *Römisches Jahrbuch für Kunstgeschichte* 21 (1984): 397-403.
430. M. Heinz, "Das Hospital S. Giacomo in Augusta in Rom. . .," *Storia dell'Arte* 41 (1981): 31-49; see also Baronino's receipt in the Archivio d. Rev. Fabbrica di S. Pietro.
431. Frommel 1981, p. 149ff., figs. 5, 32, 42, 45, 48.
432. N. Nobis, *Lorenzetto als Bildhauer* (Bonn, 1979).
433. Ferri 1885, XLI; Lorenzetti's handwriting is secured by receipts from the construction crew at St. Peter's (Nobis [see n. 432], p. 237ff.); see this essay, fig. 45d.
434. See, for example, the group put together by Bartoli (pp. 32-35, figs. 155-182), which stem from the same draftsman as the scale of measurement on \*U 829A v.
435. Frommel 1986, p. 280ff.

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