DRAWING AND PAINTING IN THE ITALIAN RENAISSANCE WORKSHOP

Theory and Practice, 1300–1600

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ONE

INTRODUCTION: FROM WORKSHOP PRACTICE TO DESIGN THEORY

> They say that knowledge born from experience is mechanical, but that knowledge born and ending in the mind is scientific, while knowledge born from science and ending in manual work is semi-mechanical.
>
> Leonardo, *Codex Urbinas Latinus,* fol. 19 recto[1]

Michelangelo at Work on the Pauline Chapel Frescos

Between 16 November 1542 and 29 March 1546, the papal treasury paid Francesco d'Amadore "Urbino," beloved servant and assistant of Michelangelo, at least 23 scudi, 94½ *bolognini* for helping the master fresco the newly built Pauline Chapel in the Vatican Palace.[2] As the account books state, and they are by no means complete, these sums comprise expense reimbursements as well as "Urbino"'s monthly salary, apparently 4 scudi to Michelangelo's 50 scudi,[3] for: "grinding colors," "ordering one of the walls of the Pauline Chapel to be keyed and plastered with *arriccio,*" "buying six *arcarezzi* of various types and twenty planks of elmwood needed for building the scaffolding."[4]

Rows of black dots outline many of the forms depicted in the composition of both Pauline Chapel frescos, the *Conversion of St. Paul* and the *Crucifixion of St. Peter* (Figs. 1, 2).[5] These dots are called "pounce marks," or "*spolvero* marks." They are minute deposits of charcoal dust (carbon) absorbed into the moist *intonaco,* the thin surface layer of fine plaster on a fresco. These deposits became permanently fixed as the water-based pigments bonded with the setting plaster during the irreversible chemical process of carbonation.[6] On contact with the carbon dioxide in the air, fresh plaster hardens, forming calcium carbonate. As the evaporating water brings the setting lime (calcium hydroxide) of the plaster to the surface, a transparent grid of carbonate crystals forms over the pounce marks and pigments, provided these have been applied while the plaster is moist.

The trapped pounce marks form the underdrawing derived from a pricked full-scale drawing, a "cartoon" that was pounced for transfer.

To reproduce a full-scale drawing exactly on another surface, the drawing's outlines could be pricked with a fine, pointed implement, such as a needle or fine stylus. Next, a small bag or sack of cloth would be filled with pouncing dust ("pounce"), most often powdered charcoal or black chalk, and its mouth would be tied shut. By tapping or smudging the pricked holes on the drawing with the pouncing bag, the artist could obtain a dotted underdrawing on the surface beneath. This entire process is called "pouncing," or "*spolvero.*" It served to transfer not only cartoons and other types of drawings but also the designs from tracings, manuscripts, prints, and ornament patterns.

Aspects of the delegation of labor in artists' workshops would remain traditional for a number of centuries. Cennino Cennini's *Libro dell'arte* (MS., late 1390s) lists the manual skills comprising the art of painting for the benefit of the apprentice, who learned the profession in the workshop of a master by assisting him.[7] According to Cennino, pouncing was one of many elementary artisanal skills such as grinding colors, applying size, gessoing, laying *bole,* and gilding to paint in tempera on panels and plastering and trueing up of walls to paint in fresco.[8] A memorandum of 6 June 1572 officially confirmed the terms of Giorgio Vasari's contract and budget to his patron, Grand Duke

Cosimo I de'Medici, for the artist had expected to hire various types of collaborators to help him fresco the dome of Florence Cathedral. Vasari's proposed budget included materials as well as manual laborers *("manouali")* and plasterers *("muratori")* to prepare the scaffoldings, *arriccio,* and *intonaco;* a foreman *("un maestro d'inportanza . . . che stia senpre in sull'opera, massime quando io sarò in terra o a far cartoni . . .");* three competent fresco painters *("maestri pratichi a lavorare a fresco");* three other painters of professional status *("maestri pictori")* to make draperies, skies, backgrounds, and wax and clay models of figures; two other *maestri* to paint ornament, backgrounds, and clouds and to transfer cartoons; and two *garzoni* for grinding colors.[9] Vasari's prospective "cartoon tracers" were practically at the bottom of his pyramid of labor. Much later, Vicente Carducho would also candidly admit in his *Diálogos de la pintura* (Madrid, 1633) that painters delegated to lowly assistants the process of transferring cartoons.[10]

Seen as a whole, such evidence can help us speculate that it was "Urbino," rather than Michelangelo, who pricked the Pauline Chapel cartoons and pounced them onto the fresco surface.[11] It would have been an unremarkable element of his salaried duties for the master, then nearing seventy years of age and failing in health. As Michelangelo complained to his biographer, Giorgio Vasari, in speaking of its strenuous physical demands, "fresco painting . . . is not an art for old men."[12]

The only surviving cartoon for the frescos, without doubt drawn by Michelangelo himself, is a beautiful fragment depicting the lower left group of soldiers in the *Crucifixion of St. Peter* (Figs. 2–4), now in Naples.[13] It portrays the powerful anatomy of the soldiers with carefully calibrated effects of *chiaroscuro* to suggest their *"rilievo"* (relief). Michelangelo drew the cartoon fragment in charcoal and black chalk on multiple, glued sheets of paper, first outlining the forms. Then he finely hatched their areas of shadow, stumping these delicately to blend the individual strokes and modulating the overall intensity of the light effects on the warm buff color of the paper surface. The type of highly rendered cartoon Michelangelo's *Crucifixion of St. Peter* fragment exemplifies may be called a *"ben finito cartone,"* literally, "well-finished cartoon" (see Chapter Seven). The phrase *"ben finito cartone"* occurs in Giovanni Battista Armenini's detailed description of how to draw cartoons in his *De' veri precetti della pittura* (Ravenna, 1586),[14] where the revered cartoons by the great High Renaissance masters are cited as supreme models of the genre. By the 1540s, when Michelangelo was at work on the Pauline Chapel frescos, Central-Italian artists and theorists had come to regard the production of cartoons as the most important phase in the preliminary design of a composition: in the words of Armenini, "the last and most perfect manifestation of everything which the art of design can powerfully express."[15]

The outlines of Michelangelo's cartoon fragment are, more or less, carefully pricked for transfer by *spolvero.* The *giornate,* the individual plaster patches comprising a fresco surface, record precisely that both Pauline Chapel frescos were entirely painted from *spolvero* cartoons, except for the first *giornata* in the *Conversion of St. Paul.*[16] There, the plaster patch exhibits incisions made with a stylus *("calco," "calcare," "ricalcare,"* or *"incisione indiretta"),* another technique used to transfer cartoons, which was quicker but more destructive than *spolvero.* Vasari's introduction to the *Vite* (Florence, 1550 and 1568) and Raffaele Borghini's *Il Riposo* (Florence, 1584) describe how artists indented the outlines of a cartoon for a fresco or easel painting with a stylus while the cartoon lay on the working surface.[17] In fresco painting, since the *intonaco* is still unset when the cartoon is traced, the procedure usually leaves ridges with relatively broad, soft troughs that are easily visible in raking light.[18]

Importantly for our purpose, however, the area in Michelangelo's fresco of the *Crucifixion of St. Peter,* corresponding to the Naples cartoon fragment, shows only *spolvero* and consists of ten crudely joined *giornate* (Fig. 5). Although the sutures of the *giornate* often coincide with the general outlines of the figures, as they should in *buon fresco,* their extremely inconsistent leveling in some parts suggests that Michelangelo's *muratore* (plasterer) for the *Crucifixion* was not especially accomplished. Plastering was among the tasks in mural painting often delegated.

Whether Michelangelo's *muratore* was "Urbino" or a day-laborer whom "Urbino" contracted is not clear. Cennino's *Libro dell'arte* provides detailed directions for the fresco painter himself to do all the plastering.[19] By contrast, fifteenth- and sixteenth-century payment documents often refer to *manouali* or *muratori* engaged by mural painters to plaster.[20] In 1576, Federico Zuccaro would immortalize his plasterer, Aniello di Mariotto del Buonis, with a portrait – trowel in hand – in the frescos on the dome of Florence Cathedral.[21] Andrea Pozzo's "brief instructions on fresco painting," appended to the *Perspectiva Pictorum* (Rome, 1693–1700), would explain the jobs that usually "pertain not to the painter, but to the *muratore":* the erecting of scaffolding; the laying of the rough, base plaster *("arricciare"),* the laying of the

Figure 1. Detail of Michelangelo, The Conversion of St. Paul, *fresco (Pauline Chapel, Vatican Palace). The pouncing or* spolvero *dots are most visible on the forehead, nose, and lips of Christ's face.*

Figure 2. Michelangelo, The Crucifixion of St. Peter, *fresco (Pauline Chapel, Vatican Palace).*

smooth, surface plaster *("intonacare"),* and the integration of sand into the surface of the *intonaco* (*"granire";* Fig. 6).

Besides grinding colors, purchasing materials, subcontracting manual labor, and pricking and pouncing the Pauline Chapel cartoons, "Urbino" probably assisted Michelangelo in painting the frescos as well (Fig. 7). "Urbino," who served Michelangelo for twenty-six years and who died in 1555 to the master's great anguish, is mentioned in the Pauline Chapel documents only as either Michelangelo's *"servitore"* (servant) or *"garzone"* (assistant).[22] He was already middle-aged. But, earlier, "Urbino" was specifically called *"pittor[e]"* (painter) in a record of his salary payment on 2 December 1540, when Michelangelo was frescoing the *Last Judgment* on the altar wall of the Sistine Chapel.[23] Moreover, in his service to Michelangelo, as other documents suggest, "Urbino" wore many hats. During the final project of carving the marble tomb of Pope Julius II, he was called *"scultore"* (sculptor), and during the ongoing construction of the new Basilica of St. Peter, he was called *"coadiutore architectorum"* (architectural assistant).[24]

Especially in comparison to the Sistine Ceiling and the *Last Judgment*, the frescoing of the *Crucifixion of St.*

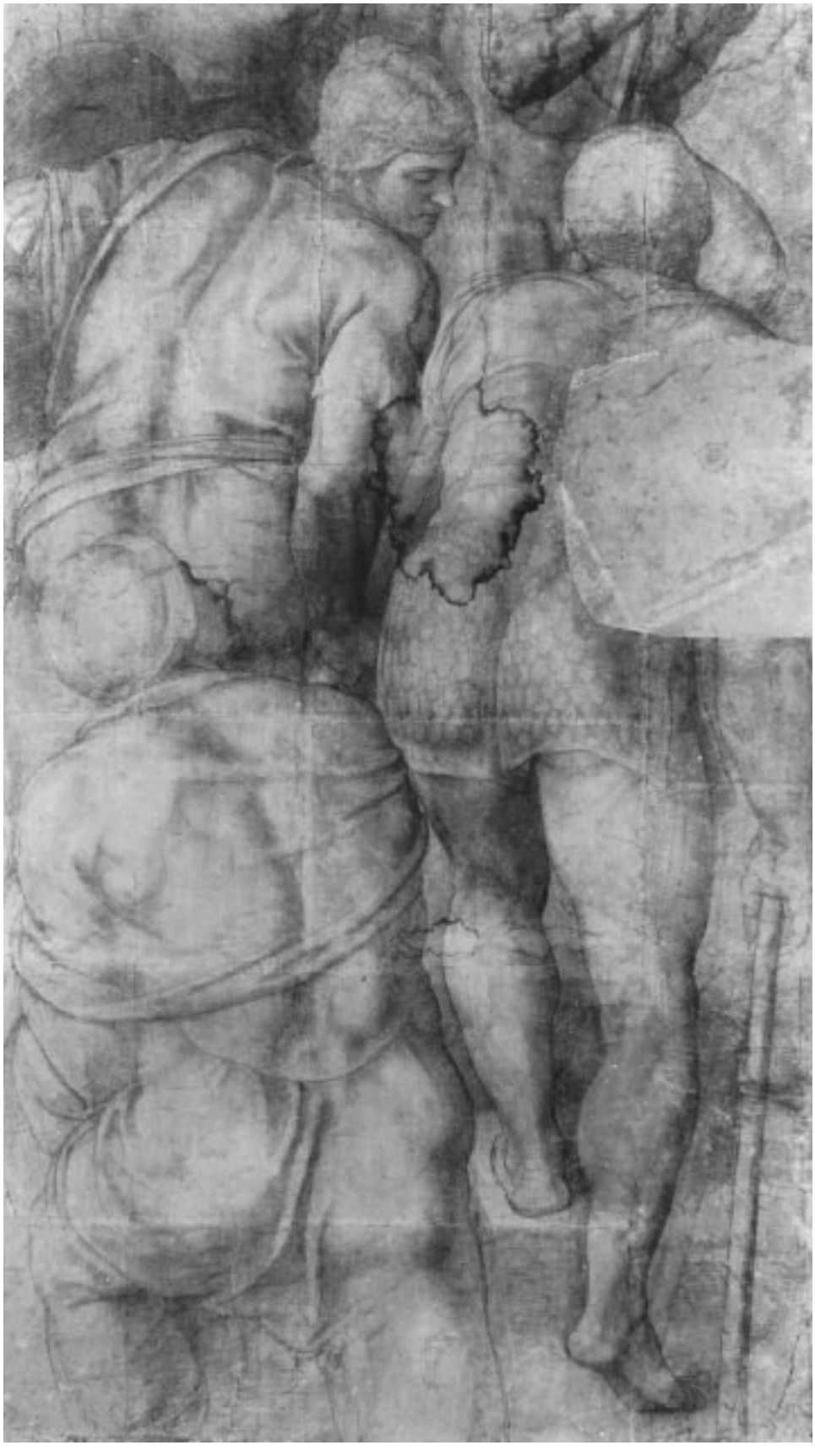

Figure 3. Michelangelo, pricked cartoon fragment for the Crucifixion of St. Peter *(CBC 188; Gallerie Nazionali di Capodimonte inv. 398, Naples).*

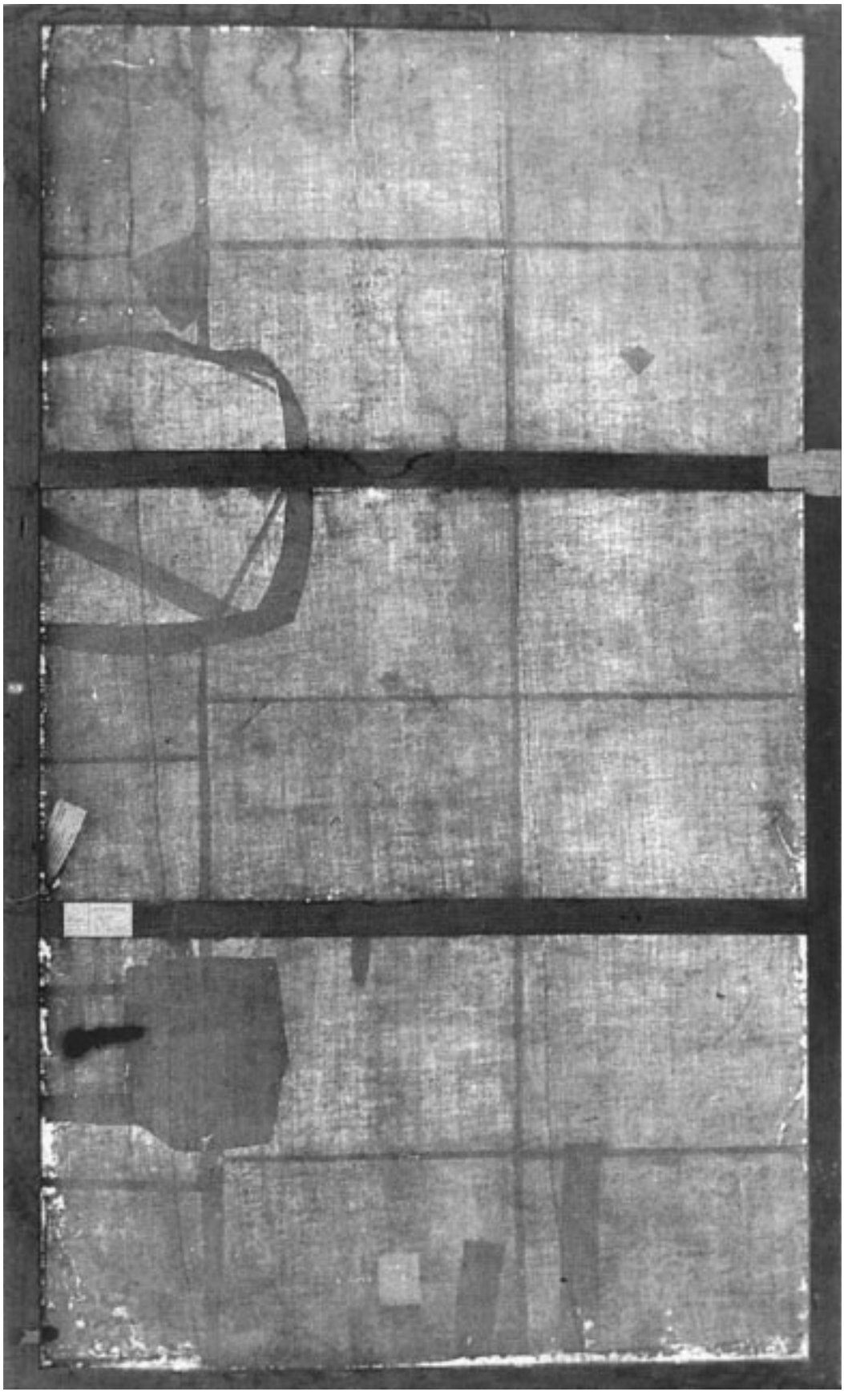

Figure 4. Verso of Michelangelo, pricked cartoon fragment for the Crucifixion of St. Peter.

Figure 5. Approximate diagram showing the disposition of giornate *and* spolvero *in the portion of Michelangelo's fresco of the* Crucifixion of St. Peter *that corresponds to the Naples cartoon fragment.*

Figure 6. Andrea Pozzo, Perspectiva Pictorum et architectorum, *Rome, 1693–1700, II (Metropolitan Museum of Art, Harris Brisbane Dick Fund, 1947; 47.73 (2), New York). This engraving portrays a master fresco painter directing a plasterer* (muratore) *and an assistant at work.*

Peter appears somewhat sloppily executed.[25] Admittedly, the *Crucifixion* has suffered from substantial later repainting by restorers and its surface requires cleaning. Nevertheless, it is clear from a close examination of the mural surface that Michelangelo and his assistant(s) generally applied their pigments thickly, largely obscuring the *spolvero* underdrawing from the cartoon and sometimes crudely disregarding the clarity of outlines suggested by the drawing. By contrast, Michelangelo's earlier, *virtuoso* fresco technique included smoothly joined *giornate,* with level transitions in the plaster, and a layering of color of nearly watercolorlike transparency, where the nude, gray *intonaco* was often left visible as tone in background elements. Areas of flesh to be modeled with sculptural contrasts of chiaroscuro (particularly, those of foreground figures) usually received, on top of the thin base flesh tone, a subtle but dense network of curved hatching in a paler color, applied with a drier brush and built layer upon layer. These pliant but orderly strokes define the forms, like the tracks of a toothed chisel on the surface of a marble sculpture.[26] More accomplished technically, the manner of painting in the *Conversion of St. Paul* conforms better with Michelangelo's earlier handling of the fresco medium.

Regarding the *Crucifixion of St. Peter,* physical evidence in both the Naples cartoon fragment and the fresco indicates that Michelangelo did not transfer the design in the cartoon fragment directly to the fresco surface but used instead the intermediary means of a "substitute cartoon."[27] A passage on the topic of cartoon transfer in Armenini's *De' veri precetti* describes the practice of "substitute cartoons" as follows: "But then to save cartoons from damage, needing afterward to trace the [cartoons'] outlines onto the surface on which one is working, the best way is to prick their outlines with a

Figure 7. Francesco Parmigianino, study of a Young Painter's Assistant Grinding Colors *(Victoria and Albert Museum inv. D.989–1900, London).*

Figure 8. Detail showing the patch with unrelated pricked outlines on the upper right of Michelangelo, pricked cartoon fragment for the Crucifixion of St. Peter *(CBC 188; Gallerie Nazionali di Capodimonte inv. 398, Naples).*

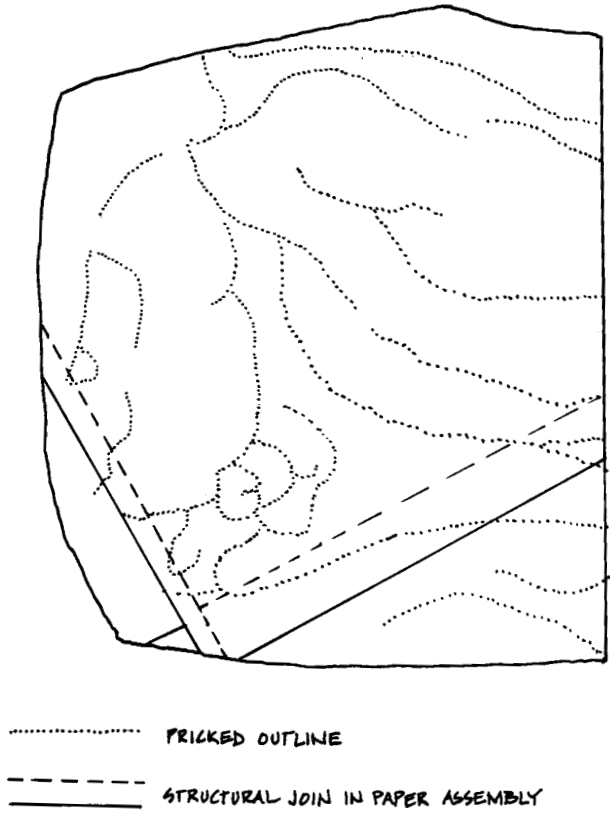

Figure 9. Approximate reconstruction of the unrelated pricked outlines on the patch of the Naples cartoon fragment, a "substitute cartoon."

needle, having placed another cartoon underneath, which becomes pricked like the one placed on top, [and which] serves later to pounce over and over where one desires to paint, and especially on plaster. . . ."[28]

If evidence left by methods of design transfer on both paintings and drawings can offer a valuable analytical tool, in certain fortunate instances its significance can transcend the history of technique.

A small piece of Michelangelo's actual "substitute cartoon" for the *Crucifixion of St. Peter* survives.[29] It is glued as a patch on the Naples cartoon fragment (Figs. 8–9). As can already be surmised from Armenini's description, a "substitute cartoon" has no drawing.[30] Thus, a "substitute cartoon" is not a duplicate of the carefully drawn master cartoon, or *"ben finito cartone."* It records only the pricked outlines obtained from the *"ben finito cartone"* over which the pouncing dust was rubbed.

The perforated but entirely undrawn design on the piece of Michelangelo's "substitute cartoon" portrays St. Peter's nude pelvic area, before this portion of the fresco was repainted *a secco* with a white loincloth.[31] The piece of the "substitute cartoon" clarifies the original iconography of the fresco, for it is clear that Michelangelo depicted St. Peter completely nude. Contemporary copies after the fresco – a drawing, two prints, and a small painting – confirm St. Peter's original design.[32]

The total nudity of the saint situates Michelangelo's interpretation of the subject in the same controversial ambit as that of his earlier, more famous fresco of the *Last Judgment* on the altar wall of the Sistine Chapel, in which the total nudity of the figures launched a well-documented cause célèbre. Although not serving the public ceremonial role of the Sistine Chapel, as a manifestation of the *"maiestas papalis,"* the Pauline Chapel was nevertheless built between 1538 and 1540 by Antonio da Sangallo the Younger for Pope Paul III to serve as both Chapel of the Sacrament and Chapel of the

Conclave.[33] Yet without the actual "substitute cartoon" piece, and the supporting evidence of copies after the fresco, the original iconography of the *Crucifixion of St. Peter* would have been lost, for no written sources record its repainting.[34]

This is the type of problem from which the present book grew and to which it will return in subsequent chapters.

Cartoons in the Context of Renaissance Workshop Practice

Michelangelo's use of pouncing and incision techniques, his application of a "substitute cartoon" to spare the Naples cartoon fragment from the ruination of the working process, "Urbino"'s probable role as the cartoon's "pouncer," and the general delegation of labor occurring in the Pauline Chapel frescos, were by no means oddities in Italian Renaissance practice. Such elements form part of a rich tradition in the workshops of Italian artists and craftspeople (Figs. 10–13).

As art history joins science in evaluating the technical data collected during the conservation of the major monuments of Medieval and Renaissance Italy, it has become apparent that the issue of artistic practice is central to any discussion of the broad stylistic and theoretical developments of art in these periods. Yet our difficulties in interpreting and synthesizing the rapidly growing body of emerging technical data suggest how little still we understand the fundamental processes that governed the production of artists, architects, and craftspeople. Their socioeconomic as well as their material and technical world should figure in a reconstruction of the "period eye."[35] The premise that artistic practices can be reconstructed from the material culture pertaining to the workshop remains insufficiently developed in the literature. Moreover, the complexity of Italian Renaissance workshop practice, though all too readily assumed recently, has been little explored. We can begin to frame some of these issues by investigating the microcosm of a single practice, that of cartoons. In reconstructing the history, functions, and design transfer techniques of cartoons, this study will attempt to demonstrate that an understanding of this complexity is not only possible but is also necessary for the history of Italian Renaissance art.

This approach, in turn, requires a considerably more pragmatic portrait of Italian Renaissance artists at work. As Giorgio Vasari's vastly influential, yet biased, account in *Le Vite de' più eccellenti pittori, scultori ed architettori* (Florence, 1550 and 1568) would have it, the glory that was Italian art culminated in the achievement of Leonardo, Raphael, and, above all, Michelangelo.[36] They brought about a revolution in the pictorial arts that became the cornerstone of what was once considered the most important phase in the history of

Figure 10. Giorgio Vasari, St. Luke Painting the Virgin, *oil on panel (Chapel of St. Luke, SS. Annunziata, Florence). While the painter (a self-portrait) works at the easel, his adult assistant grinds colors in an adjoining room.*

Western art: the High Renaissance (c. 1495–1515), when painting, sculpture, and architecture were thought to have attained a perfection rivaled only by that of Classical Greece and Rome. Although we, as art historians, ceased long ago to view the High Renaissance in such absolute (chauvinistic) terms, acknowledging the overt mythologizing by sixteenth-century art theorists, we have continued to accept, without serious challenge, the corollary that arose from the Cinquecento myth: the notion that the great Italian Renaissance artists were effortless creators of masterpieces.

As unique documents of the gestation of works of art, drawings in particular hold the promise of a glimpse into the private world of genius. But basic questions about many significant Italian artists still await detailed answers: How did they draw? What were the purposes of their drawings? And what do their drawings reveal about their general design methods? Though fundamental to our understanding of the role of drawing in the artistic production of the Italian Renaissance, such questions of function have often remained until relatively recently, and to a great extent by necessity, subordinate to problems of connoisseurship: the authentication, dating, contextualization, and definition of an artist's corpus of drawings. To see revealed the intricate techniques and devices actuating the design processes of the great Italian Renaissance masters is not to deny their genius, but rather to understand how fundamental a tool drawing was to their vision. The study of Italian Renaissance drawings is an integral part of our understanding of artistic practice in this period.

Figure 11. Alessandro Paganino, Libro Primo: De rechami (Il Burato), *Venice, c. 1532, fol. 2 verso (Metropolitan Museum of Art, Harris Brisbane Dick Fund, 1948; 48.40, New York). This woodcut portrays women transferring designs onto the cloth for drawing and embroidery. The woman using the* spolvero *technique is seen in the lower left.*

But no less importantly, artists and craftspeople shared more common ground in the practice of drawing than has been supposed (Figs. 10–13). The recognition of painting, sculpture, and architecture as *studia humanitatis,* and their consequent inclusion among the "liberal arts," was one of the principal legacies of the Italian Renaissance. But to argue for the noble status of the arts, Quattrocento and Cinquecento theorists sought insistently to distance the artist from the craftsperson, a rhetorical

dichotomy that we have often accepted too uncritically as fact. The reality was more complex. For instance, within the polemics of the *"paragone"* or comparison of the arts, the distinction between the "science" (i.e., the theoretical or mathematical basis) of painting and the "mechanical" (i.e., the manual) labor of sculpture served as Leonardo's rhetorical strategy in defending the greater nobility of painting.[37] The posthumously compiled *Codex Urbinas Latinus* (fol. 20 recto) records Leonardo's impassioned, if biased, plea: "Sculpture is not a science [*scientia*], but is a most mechanical art [*è arte meccanichissima*], because it causes its executant sweat and bodily fatigue, and he need only know the basic measurements of the various members [*le semplici misure de membri*] and the nature of the movements and poses, and this is sufficient to finish his work."[38]

Yet, as we shall observe repeatedly during the course of this book, Leonardo's voluminous notes on the art of painting and drawing teem with advice both "scientific" (i.e., the theory of anatomy, proportion, light and shade, color, and perspective) and "mechanical" (i.e., the recipes for distilling oil, making colors, varnishes, chalks, ink, cardboard, and prepared paper). Seen as a whole, these notes perhaps portray a less familiar Renaissance, that of workshop tradition with its inheritance of cultivated design habits, technical shortcuts, props, gadgets, and its view of drawing primarily as a functional tool rather than as an expressive masterpiece.

Although best known as a means of cartoon transfer used by Italian Renaissance mural painters, the *spolvero* technique would remain among the most enduring, versatile, and universal means of design transfer. Its actual history, albeit with ebbs and flows, spans from at least the tenth-century pricked patterns, discovered in the *"Caves of the Thousand Buddhas"* (Dunhuang, China; see Fig. 127), to the pounced *"stil Liberty"* murals from 1915 to 1916 by Amedeo Bocchi in the *Sala del Consiglio* (Cassa di Risparmio, Parma), to the pricked designs for luster ware by William de Morgan (1839–1917).[39] Designers of Byzantine-style icons, of murals and stage sets, of embroidery and clothing, of ceramic tiles and holloware are only a few of the craftspeople still using the technique today.[40] Modern restorers of murals continue this tradition as well.[41] The history of the *calco* technique *("calcare," "ricalcare,"* or *"incisione indiretta"),* albeit shorter than that of *spolvero,* also reaches well into the twentieth century – for instance, in the 1930s murals by Ardengo Soffici and Giovanni Tolleri, as well as in contemporary artisanal endeavors.[42] Its origins, on the other hand, are much disputed.[43]

Following its importation into Italy around 1340, and until about 1550, the *spolvero* technique played a highly significant role in the production of paintings (especially in the medium of *buon fresco*) and, to a lesser extent, in that of drawings.[44] In the 1340s to 1360s, Andrea di Cione "Orcagna" and his workshop relied on patterns, repeated by means of *spolvero,* to create the elegant framing ornament in mural cycles originally in the churches of S. Maria Novella and S. Croce, Florence.[45] From the 1430s to the 1460s, Paolo Uccello, Domenico Veneziano, Andrea del Castagno, and Piero della Francesca would pioneer the application of *spolvero* cartoons to paint figural compositions, and from the 1460s to 1470s onward, muralists would begin to combine *spolvero* with *calco* to transfer cartoons more quickly, as is clear from the work by Melozzo da Forlì, Domenico Ghirlandaio, Pietro Perugino, Bartolomeo della Gatta, Luca Signorelli, Bernardino Pinturicchio, and others.[46] Eventually, the use of *calco* led to a further refinement – familiar to us from modern-day "carbon copies" – as we see in drawings from the 1550s by Battista Franco.[47] Before tracing the outlines of a design, the artist would smudge charcoal or black chalk (less commonly, red chalk or graphite) on the verso of the sheet itself, or on the verso of a separate sheet placed underneath. This way, the artist could press less heavily with his hand on the stylus (or other pointed tool) as he more fluently traced on the paper and therefore minimized the damage to the original design. Vasari's *Vite,* Borghini's *Il Riposo,* and Armenini's *De' veri precetti* further confirm that this "carbon paper" procedure became standard for transferring drawings from one sheet to another, and cartoons to both panels and canvases.[48] Examination with infrared reflectography of the underdrawings of many painted panels by Andrea del Sarto (1486–1530) reveals the schematic, somewhat jagged outlines that are typical from such a procedure.[49] Use of this practice also probably explains the fortunate survival of an unusual group of sixty monumental *"ben finiti cartoni"* by Gaudenzio Ferrari (1475/80–1546), his close associate Bernardino Lanino (c. 1512–1583), and their circle of Piedmontese–Lombard artists. Exquisitely rendered in charcoal, these cartoons are exhibited in the Accademia Albertina in Turin.[50] Late Renaissance and Baroque treatise writers on engraving would also recommend this modified *calco* technique to transfer a final design onto the plate.[51]

Yet despite the savings in labor that the *calco* technique could represent, especially in the case of large-scale mural cycles, numerous works from the late

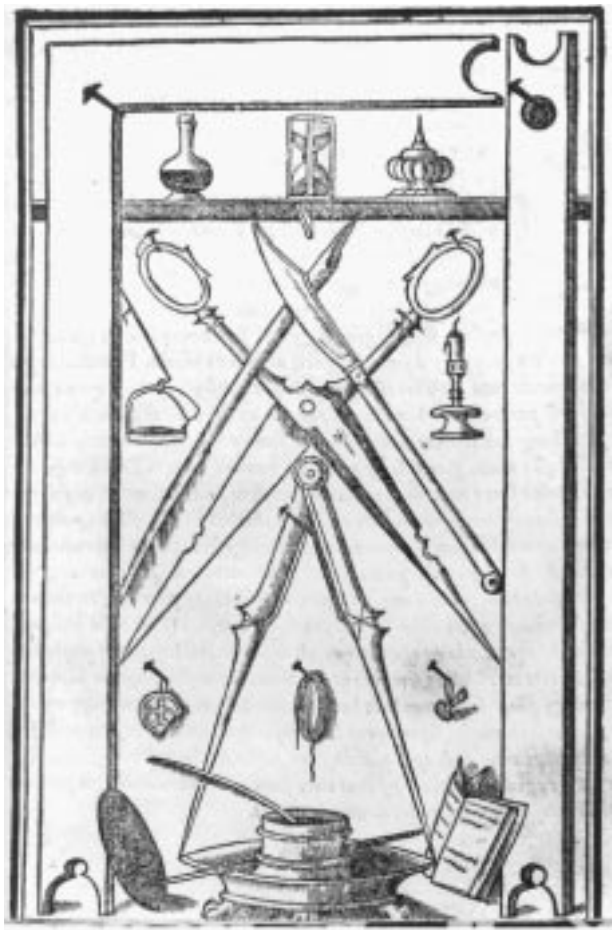

Figure 12. Giovanni Antonio Tagliente, Opera Nuova, *Venice, 1530, fol. 25 recto (Metropolitan Museum of Art 35.75.3L, Harris Brisbane Dick Fund, 1935, New York). This woodcut illustrates the tools necessary for drawing and calligraphy.*

Quattrocento and early Cinquecento attest to the particular utility of the traditional *spolvero* technique. Throughout this period (and well into the Novecento), muralists continued to transfer patterns with *spolvero* in painting complex or repetitive ornament. During the High Renaissance, Leonardo and his workshop sometimes used *spolvero* cartoons to reproduce or paint life-size portraits. Michelangelo and Raphael rarely dispensed with cartoons to paint figural compositions in fresco, transferring them often enough by means of *spolvero,* rather than *calco.* As Armenini's *De' veri precetti* vividly tells, Giulio Romano applied the *calco* technique to produce finished drawings of dazzling virtuosity.[52] Yet until his death in 1546, when it had become particularly unusual for fresco painters to do so, Giulio continued to rely on the *spolvero* technique extensively. Although the application of *calco* is by comparison more typical, passages of *spolvero* nevertheless recur throughout the figural scenes and ornament of the Farnese Gallery ceiling (Palazzo Farnese, Rome), frescoed by Annibale and Agostino Carracci in 1597–1600 with a team of assistants.[53] The extant cartoons for this project reveal the evidence of both types of design transfer.[54]

A vast corpus of extant drawings can help us document the *spolvero* technique. A group of such drawings was previously gathered by the author – by no means an exhaustive account – but one that was intended to illustrate the extent of the technique's dissemination. Most commonly, such drawings are of two general types. Either they have outlines pricked for transfer onto another surface,[55] or they are drawn freehand over preliminary *spolvero* (pounce marks), which the artists connected dot-by-dot to produce the final design.[56] The former type is by far the more abundant. A few drawings combine both *spolvero* underdrawing and pricked outlines for further transfer;[57] some examples are also drawn on the basis of preliminary pricked outlines.[58] By comparison, it is substantially more difficult to compile a sufficiently nuanced corpus of stylus-indented drawings to study the variations of practice that concern us here: the evidence of incisions on the working surface can often prove extremely ambiguous (see Chapter Ten).

Some of the greatest Italian artists produced drawings utilizing the *spolvero* technique. An incomplete list

Figure 13. Cesare Vecellio, Corona delle nobile et virtuose donne, *Venice, 1600, fol. 30 (Biblioteca Marciana, Venice). This extremely rare woodcut depicts the squaring grids necessary for enlarging and diminishing embroidery patterns, and the pointed instrument for tracing or pricking their outlines.*

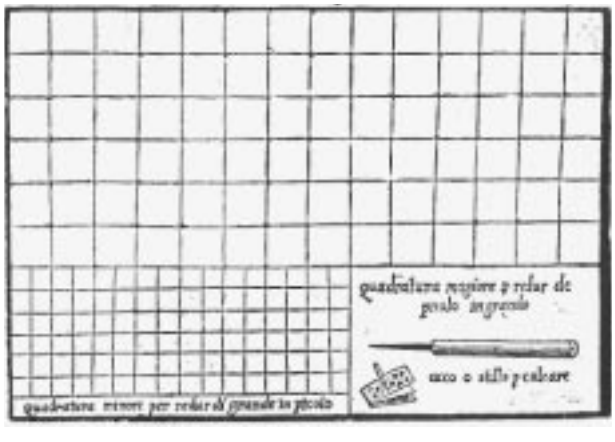

Figure 14. Raphael, pricked cartoon for an allegory, "The Knight's Dream" *(CBC 231; British Museum 1994-5-14-57, London), rubbed with black pouncing dust from the recto and verso.*

would include Paolo Uccello, the brothers Antonio and Piero Pollaiuolo, Andrea Verrocchio, Domenico Ghirlandaio, the brothers Gentile and Giovanni Bellini, Melozzo da Forlì, Sandro Botticelli, Cima da Conegliano, Filippino Lippi, Leonardo, Lorenzo di Credi, Luca Signorelli, Pietro Perugino, Michelangelo, Fra Bartolomeo, Raphael, Andrea del Sarto, Giulio Romano, Polidoro da Caravaggio, Baldassare Peruzzi, Sebastiano del Piombo, Domenico Beccafumi, Perino del Vaga, Michelangelo Anselmi, Francesco Parmigianino, Niccolò dell'Abate, Annibale and Agostino Carracci, as well as Domenichino. Although this wealth of genius and near-genius may tip the balance of our attention in their favor, the group of drawings here examined encompasses a nearly equal number of examples by less accomplished draughtsmen, and the number of these still pales in comparison to the vast group of such drawings by anonymous figures. In fact, the overwhelming majority of drawings documenting the *spolvero* technique – well over 1,000 in number, if we were to add up all the individual sheets comprising albums or entire archives scattered in the collections of Europe and North America – were produced by long-forgotten artisans of modest ability.[59]

At least sixty-one of Raphael's drawings, if we include the seven colored Sistine Chapel tapestry cartoons (Victoria and Albert Museum, London), that is, about one-sixth of his surviving corpus, are either pricked for transfer or drawn on *spolvero* marks, a remarkable fact (Plates VI, VII; Figs. 14–15).[60] The tempting explanation for this high number, that the *spolvero* technique was extremely common by the High

Figure 15. Raphael, "The Knight's Dream," *oil on panel (National Gallery, London), painted from* spolvero *underdrawing.*

Renaissance, gets the answer only half right. Emerging from his training in Pietro Perugino's *bottega*, which represented a tradition of design reproduction that was particularly strong in the regions of Umbria and the Marches, as we shall see, Raphael realized fully the potential efficiency of *spolvero* as an aid in the creative process of preliminary drawing. He adopted the technique to produce synthetic types of drawings, both before and after the final cartoon stage, pricking and pouncing small-scale and large-scale drawings from one sheet of paper to another. Some artists of the preceding generation had explored the possibilities of the technique as a compositional tool. In their work, however, the surviving evidence is often scant and only becomes intelligible if viewed vis-à-vis Raphael's large *oeuvre.* But Raphael's remarkably fluent use of *spolvero* as an exploratory design technique remained relatively exceptional, even during much of the High Renaissance, for artists and craftspeople more commonly used it as a tool for design reproduction and variation.

To speak of the cartoon's history is to argue for patterns of development, for contrasts of functions during the three centuries that concern the present book – broadly speaking, between 1300 and 1600. These are hardly simple or linear developments. As is emerging more clearly from the scientific investigation of underdrawings in panels, the application of cartoons in easel painting and fresco varied greatly. It is the medium of fresco, however, that can claim the greater innovations. We have also alluded to the shared practices of artists

and artisans. For the most part, however, art and craft followed parallel courses. Although the *spolvero* technique has enjoyed a fairly continuous use in such decorative arts as embroidery, in the creative work of Italian painters and draughtsmen it experienced an enormously important but comparatively briefer surge in popularity (c. 1370–1520). A survey of the technique's diverse functions reveals at once the practical reasons why it has endured for more than a thousand years in artisanal endeavors, enjoying a widespread application from China to the Western world, but why it also lost ground in the creative process of design.

Chapter Two will illustrate step-by-step the actual procedure of transferring designs, discussing the types of drawing surfaces, media, tools, and technical shortcuts used, as well as the assembly of large-scale cartoons (including costs and types of manual labor). It is clear that to produce the monumental, comprehensive cartoons that began to predominate from the 1450s onward was both costly and labor-intensive. Because of its essential simplicity, the *spolvero* technique was well within the capabilities of not only apprentices and assistants but also of semiskilled craftspeople and unskilled copyists. This is further confirmed by a relatively large Renaissance and Baroque literature of popular how-to craft manuals – "teaching without a master."[61] Chapter Three will then explore the most basic and most common application of *spolvero:* as a means of copying designs exactly and of replicating them manifold. Yet, as pointed out in Chapter Four, the abuse of this basic reproductive function would largely taint the critical reception of this and other techniques of copying in the sixteenth and seventeenth centuries; among reputable artists, this factor must have played a role in the gradual disuse of *spolvero* during the course of these centuries.

Chapters Five and Six will draw a general distinction between the functions of *spolvero* "patterns" and those of *spolvero* "cartoons." Emerging in Italy around 1340, from the Late Medieval tradition of stencil making, patterns enabled the serial reproduction of increasingly elegant and complex ornament. Contrary to frequent assumptions, at least in regard to full-scale drawing, new design types emerged from the Trecento to the Quattrocento, and the functions of old ones evolved substantially. As the fifteenth century unfolded, the steps in the preliminary design process, from initial idea ("*primo pensiero,*" to borrow Filippo Baldinucci's term in 1681 for "quick sketches") to final execution in paint, gradually became more distinct and were explored in increasingly varied drawing types. The nascent science of perspective would require an increasingly precise design technology during the Quattrocento. Emerging during the 1430s, as a means of perfecting the design of figural compositions, cartoons may be viewed as part of a new Renaissance, Central-Italian tradition of *disegno.*

The Italian term *"disegno"* denotes both "design" and "drawing," as is already apparent in Cennino's *Libro dell'arte* and Leon Battista Alberti's painting treatise.[62] As theorists of the Late Renaissance more expansively explained, the two activities were considered to be inextricably intertwined. "Design" was the abstract manifestation of a highly developed aesthetic cognitive faculty (what Federico Zuccaro would call *"disegno interno"*), whereas "drawing" was the physical product of the hand, guided by the genius of design (what Zuccaro would call *"disegno esterno"*).[63] Vasari, Armenini, Lomazzo, and Zuccaro took it for granted that *disegno* encompassed the very idea already present a priori in the artist's mind, hence the importance of drawing as the foundation of all the arts.[64] Indeed, the concession that *disegno* embodied the common origin of painting and sculpture proved to be a way of settling the dispute of the *"paragone,"* as Jacopo Pontormo shrewdly put it in his reply to Benedetto Varchi's inquiry of 1547.[65]

Chapter Seven will describe the dramatic changes in function and appearance of some late Quattrocento and early Cinquecento cartoons, as an ideal of *disegno* took hold in Central Italy. The emerging practice of "substitute cartoons" (Chapter Eight) would be a direct consequence of this ideal, as would the systematic use of tracing methods in the preparation of preliminary drawings (Chapter Nine). The last two chapters will attempt to clarify the functions of stylus tracing *(calco*) relative to pouncing *(spolvero)*. Based on the testimony of Renaissance and Baroque treatises, we can assess the advantages that kept *spolvero* viable, though in limited contexts, long after *calco* eliminated the old technique's main disadvantage – laboriousness. Such sources also suggest the reasons why painters combined these two design transfer techniques in their murals, especially during the period of transition, between the 1470s and 1520s.

The shifts in working practices that began in the 1470s to 1490s were probably not coincidental, but the outcome of a number of interconnected factors, reflecting the tension between traditional workshop procedures in the Quattrocento and the ideals of design, emerging in the early Cinquecento. An increasing number of monumental architectural spaces to be frescoed would require expedient execution and would entail

complex effects of perspective. Concurrently, the functions and physical appearance of cartoons would evolve, the use of "substitute cartoons" would often become more comprehensive, and, by the first three decades of the sixteenth century, *calco* would gradually displace *spolvero* as the practical method of cartoon transfer.

But throughout the fifteenth and sixteenth centuries, different approaches to the preparation of paintings coexisted in Central Italy and Northern Italy, particularly in the Veneto. In Central Italy, the tradition of mural painting, particularly that of *buon fresco,* had nourished a relatively systematic tradition of design, with more or less clearly defined types of preliminary drawings on paper. In Venice, where easel painting was favored over mural painting (not the least because of the lagoon's salt and damp climate), artists usually produced the underdrawings of their compositions freehand, directly on the panel or canvas (Fig. 16).[66] In his *Vita* of Titian, Vasari famously – if unsympathetically – attempted to explain Giorgione's new, direct approach to painting at the time Titian entered his workshop, around 1507–8. According to Giorgione, who closely imitated nature, "painting only with the colors themselves, without further study in drawings on paper, was the true and best manner of proceeding and was true design" (*"il dipignere solo con i colori stessi, senz' altro studio di disegnare in carta fusse il vero e miglior modo di fare et il vero disegno";* Fig. 17).[67] Technical examination of Giorgione's and Titian's paintings substantiates at least the spirit of Vasari's claim; extant drawings on paper by these artists are rare (see Fig. 20). Not surprisingly, Venetian easel painters hardly employed *spolvero* except for reproduction: to replicate entire compositions, or individual figures and groups, or isolated decorative motifs in further paintings. This probably explains the presence of *spolvero* in background details of Vittore Carpaccio's *Apotheosis of St. Ursula* (Gallerie dell'Accademia, Venice),[68] as well as those of his *Hunt in the Lagoon* (J. Paul Getty Museum, Los Angeles) and *Two Women on a Terrace* (Museo Correr, Venice), painted in 1490–95.[69] The latter two canvases were originally part of the same composition. Carpaccio and his *bottega* otherwise worked from freehand underdrawings.[70] Of the small corpus of Venetian Quattrocento paintings showing *spolvero,* in fact, the majority have turned out to be workshop pieces, usually depicting such generic subjects as Madonna and Child groupings.[71] Moreover, and also not unexpectedly, few Venetian drawings documenting the *spolvero* technique survive from the period between the 1480s and 1530s, in sharp contrast to the abundance of Central-Italian examples, a reflection of the general disparity in the quantities of surviving drawings between the two regions, often pointed out in the literature.[72] This disparity therefore does embody fundamental, regional differences in the conception of drawing as a tool.[73] By the Cinquecento, the emphasis in Venice on the act of coloring, *"colorito"* or *"colorire,"* frequently at the expense of *disegno* on paper may have enhanced these differences.[74] Paolo Veronese's frescoes, like those of many of his Central-Italian contemporaries, exhibit *calco.* The pricked drawing of a woman's head (Figs. 18–19), from the 1560s, probably served as a *simile* for replication in a variety of compositions.

Yet, as we can repeatedly observe, even during the era of monumental cartoons in Central Italy, between 1450 and 1750, their preparation was not as commonplace as theorists may have wished, hence their emphasis on the subject. In the introduction to the *Vite,* Vasari conceded – nearly empathetically – that in his day there were many painters of easel pictures who omitted cartoons. But, he insisted that for fresco they "must be done and cannot be avoided."[75] In providing instructions for painting, subsequent writers often treated the preparation of cartoons and freehand underdrawings as equally good alternatives. Since the cleaning of the Sistine Ceiling, it has become well known that Michelangelo frescoed relatively large parts of the ceiling (1508–12) without cartoons, notably the *Ancestors of Christ* on the lunettes (which are dazzling primarily for their arrangements of color).[76] In the Sistine lunettes the master may have reverted to a more traditional use of *sinopia* underdrawings on the *arriccio* – a technique employed by mural painters and mosaicists since Late Antiquity and Early Christian times. When artists omitted cartoons, they also sometimes enlarged the design directly onto the working surface from a finished, small-scale drawing, by constructing grids of proportional squares. In 1596–1602, Giovanni and Cherubino Alberti would transfer large parts of their designs from full-scale cartoons, by means of stylus incision *(incisione indiretta),* to paint the illusionistic ceiling with the *Apotheosis of St. Clement (Sala Clementina,* Vatican Palace).[77] The muralists, however, would also enlarge numerous drawings for the angels in the prominent central group of the ceiling directly onto the *intonaco* by means of proportional squaring grids, thereby omitting cartoons altogether.[78] The incised squaring grids on the *intonaco* are especially visible in raking light. Andrea Pozzo's *Perspectiva Pictorum* (Rome, 1693–1700) illustrates the application of such proportional squaring grids and