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DECAY, LOSS,
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WASTE WORK

Early Modern Stories from the Cutting Room Floor

edited by Francesca Borgo and Ruth Ezra



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1. Sandro Botticelli, *Saint Augustine in His Study*, ca. 1490–1494. Tempera on panel, 41 x 27 cm. Florence, Uffizi.

The Work of Waste: An Introduction

Francesca Borgo and Ruth Ezra

“These people say material, but they mean work.”¹

Around 1490 to 1495, when the Florentine painter Sandro Botticelli portrayed Saint Augustine in his study on a small panel now at the Uffizi, he forgot to take out the trash. Used-up pens and shredded documents litter the painting’s foreground (figs. 1 and 1.1). Their detailed rendering tells a step-by-step story of material vicissitude. The quills were tempered, sharpened and re-sharpened, exhausted, discarded; the sheets were first inscribed with ink, then crumpled and torn to pieces.

Due to their location, shape, and arrangement, these scraps can only be characterized as waste. Scattered in an ostensibly random disposition on the stone floor just beneath the saint’s platform desk, they had but a short distance to fall, clearly thrown from the writer’s perch. And indeed, to judge by the three worn-down pens that lie among the refuse, Augustine has been writing and rewriting for quite some time, and with some effort. While a nib had to be sharpened frequently, a quill, once cut, could last several days, even weeks. Recutting and scraping were specialized skills worth cultivating.²

Early modern economies of thrift encouraged the pursuit of virtuosity in maintenance work, as in the case of quills.³ In 1601 the Englishman Philemon Holland boasted of translating all of Plutarch’s *Moralia* with a single gray goose feather.⁴ There was no such virtue to be won by advertising

1. “Diese Leute sagen Material und meinen die Arbeit.” Translated in Loos, “Building Materials,” 115.

2. Finlay, *Western Writing Implements*, 8–12; Clemens and Graham, *Introduction*, 18. For pen trials, see Clemens and Graham, *Introduction to Manuscript Studies*, 45. For instructions on quill sharpening, see Cennini, *Craftsman’s Handbook*, 8; Neudörffer, *Ein Gesprächbüchlein zweyer schüler*.

3. Werrett, *Thrifty Science*, 109–128; Barker, “Maintenance Work”; Ryley, *Re-Using Manuscripts*; Woodward, “Swords into Ploughshares.” Erratic supply chains also played their part. The best goose feathers were a seasonal harvest, plucked in the spring. Shortages occurred, as in Venice in 1433, an episode Ambrogio Traversari recounts in his letters. In Florence at the same time, bundles remained comparatively numerous; see Finlay, *Western Writing Implements*, 2.

4. “With One Sole Pen I writ this book, / Made of a Grey Goose Quill, / A Pen it was when I took, / and a Pen I leave it still,” cited in Fuller, *History of the Worthies*, 3:181. The rhyme appears elsewhere, with the book in question being Pliny the Elder’s *Natural History* or Camden’s *Britannia*, a



1.1. Detail of fig. 1.

a quill's premature molting. Augustine's discarded plumes are plainly spent, significantly shorter and thinner than the working quill of his right hand. If Botticelli means to make an attribute of scribal waste, he signals resources expended, not squandered.⁵

Elsewhere in the foreground, waste appears to be the result of provocation (fig. 1.1). Torn bits of paper speak of frustration, of a moment's irritation at odds with the saint's current poise. Was it Augustine's own words or those he received that triggered the fit of entropic pique? Below his left foot lies a clue: the remains of what was perhaps once a letter, complete with its *nizza*, or arrow-shaped correspondence fastener. The strip carries a touch of a red wax seal, a fitting detail for an inveterate epistolary writer. On the other hand, the fibrous fringe and filament pattern legible on several nearby scraps may indicate that these are all in fact pieces of papyrus.⁶ Did the saint rend apart a scroll after reading?

substitution that suggests the rate was an idealized feat rather than a tested truth. Finlay, *Western Writing Implements*, 10.

5. By the late sixteenth century, feathers were increasingly used to stuff beds in prosperous households across Europe. While the main supply came from white meat production, it is possible that even stubby quills enjoyed an extended life in pillows and mattresses. Woodward, "Straw, Bracken and the Wicklow Whale," 65–67.

6. Fifteenth-century Italian humanists collected samples of papyrus and scrutinized mentions of it in classical texts. See Perrat, "Les Humanistes amateurs de papyrus." Contemporary artists were also aware of the peculiar physical makeup of papyrus paper. In one of his riddles, Leonardo da Vinci, a one-time workshop fellow of Botticelli, writes of "papyruses, which are made of disunited hairs and which hold the memory of things and facts regarding men" (*Manuscript I*, fol. 64v). We thank Kathryn Rudy and Katherine Taronas for their generous discussion on this point.

Whatever the case, his outburst preceded the painting's curtain time. A green drape, pulled back theatrically toward the left, opens onto a now restful scene of making. Yet Botticelli invites us to reconstruct a prior, more turbulent phase of manufacture from the mess strewn on the ground. He reveals Augustine's work to be a process not without mistakes, a cycle of unsatisfying drafts, bursts of passion, and ongoing attempts to perfect a final result. The saint's thinking and doubts leave behind a physical residue for the viewer to ponder.

Similar to the increasingly common use of the imperfect *faciebat* in artists' signatures, this is an *opus imperfectum*—fittingly, also the title of Augustine's last work.⁷ And if, as has been argued, the Renaissance practice of drawing at a desk gave rise to the notion that artists, like writers, generated ideas, Botticelli's inclusion of refuse in the saint's study could be taken as an attempt to suggest that painters, too, generated waste.⁸ They suffered failures, lost their nerve, and killed many darlings. To borrow a tagline from "Forty-One False Starts," Janet Malcolm's celebrated essay on the same analogy, "How does the painter [. . .] know when to stop? How does the author know where to start? It's all a question of process."⁹

In his own practice, Botticelli wavered on when to put brush to dustpan. He painted Augustine seated at his desk four times throughout his career, and only once did he decide to depart from tradition and introduce the unusual detail of a littered floor. In the fresco for the Church of Ognissanti (1488–1490), the predella of the San Marco altarpiece (1489–1490), and the wing of the Transfiguration triptych (1495–1500), the voluminous folds of the saint's mantle rest on tidy ground while Augustine sits absorbed in contemplation. Looking further afield, the detail appears to be a hapax in Augustinian iconography. As such, it has received minimal attention and no exegetical attempt.¹⁰ Why did Botticelli choose to make the material by-products of intellectual work so visible in one example but repress the mess in all the others?¹¹

7. For Angelo Poliziano's role in promoting the use of the imperfect tense of *faciō* (to make) around 1489, see Jufen, "Fecit-Faciebat." For Augustine's *Opus imperfectum* and the inadequacies of verbal communication, see Conybeare, "Augustine's *Marginalia Contra Julianum*."

8. Cole, "The Technical Turn," 111.

9. Malcolm, "Forty-One False Starts."

10. Cosma and Pittiglio, *Iconografia agostiniana*. The only exception known to us is Cuka, "Sandro Botticelli," with references to previous bibliography on the painting.

11. Compare the Uffizi panel, an outlier in the group of four, to Quiringh Gerritsz. van Brekelenkam's

As in any act of making, there is a double register at play. The work and the by-product, yes, but also the surface and the underlayer, the wanted and the unwanted, the salvaged and the discarded. The horizontal split of the Uffizi panel, its composition halved by the table's wooden surface, maintains this boundary. Pushed over the threshold of the desk's board, the writer's waste lands just beyond his sight line. Only the audience sees the full cross-section of creation, spit-balls and all.

The Uffizi panel models an established anthropological reading of disposal as an act of spatial displacement: of moving rather than of discarding, of containment despite disappearance.¹² Held in storage—whether in the bin, the landfill, the cistern, or the mine—waste is at once absent and yet still very much present.¹³ It is also procedural. As the image of Augustine illustrates, effecting waste entails “a dialectical symbolic process in which there is a simultaneous *production* of that which must be *disposed of*.”¹⁴

The disappearing act that Botticelli performs via his split composition exposes invisibility as a key feature of early modern waste management, a trait that still defines how refuse is handled today.¹⁵ And it is not just spent materials that continue to hide from view, disguised by being beaten underfoot or stashed away overhead.¹⁶ Lurking under the proverbial table and eluding interpretation are all the conduits and infrastructures, economics and norms, of waste's past handling.¹⁷ This default invisibility, to which Botticelli reverts by omission elsewhere, holds up in the historiography. Waste remains little discussed in studies of early modern artistic invention, in part because historians prefer to regard it from the perspective of consumption rather

than production.¹⁸ In criticism of contemporary art, it has gained more traction as a material or medium.¹⁹ Even then, scholars call it by another name: *spolia*, *objet trouvé*, junk art. Waste as a driver of creativity seems only to attract notice if legible as a reclaimed fragment, something integral to, but autonomous within, a larger whole.²⁰

The dearth of scholarship is all the more surprising given how aggressively art historians now court the studio and the laboratory as research partners. As Jennifer Roberts observed, summarizing her recent foray into a printmaker's workshop, “There's nothing like having to ask the instructor whether it's OK to pour something down the sink to impress upon you the fact that art draws from multiple streams of extraction and waste.”²¹ Yet, however enamored scholars like Roberts may be of the technical, the material, and the procedural, the focus of historical inquiry has largely remained *atop* the workbench, the desk, and the easel.²² Everything that accrues above constitutes the central interest of the discipline—the *artwork*. Whither the *waste-work*, the *work-as-waste*, steadily accumulating *underneath*?

This secondary output lurks not just under the work surface but under the surface of the artifact as well. Waste is, in this sense, the least visible of artists' materials. Inside the black box of the finished object, apparent in cross-section or X-ray, lies an archive of *factura*, a stratigraphy of variously articulated matter transformed, consumed, and discarded in the process of fabrication.²³ Conservators march in the vanguard when it comes to interpreting these buried by-products. And yet, to take underdrawing studies as one example of technical wastework, infrared reflectography (IRR) rarely if ever sustains additional analysis through the lens of discard studies or waste theory.²⁴ X-radiographs, which show a painting's construction and preparation,

The Tailor's Workshop, 1661–1662, oil on panel, now at the Rijksmuseum, Amsterdam, where scraps of fabric appear on the ground beneath the cutting table but are absent from his other treatments of the same subject at the Worcester Art Museum (inv. 1910.7) and the National Gallery, London (inv. NG2549). For the spatial underbelly of the tailor's shop, see Pitman, “Tailor's Hell?”

12. Douglas, *Purity and Danger*; Thompson, *Rubbish Theory*.

13. Hetherington, “Secondhandedness,” 159; Reimann, *Territories of Waste*. Michel Serres proposes the dual action of the cistern, both reservoir and tap, as a metaphor for this paradox. Serres, *Parasite*, 157. See discussion in Yates, *Error, Misuse, Failure*, ch. 3.

14. Cooper, “Recycling Modernity,” 1120. Emphasis in original.

15. Armiero, *Wasteocene*.

16. In early modern buildings, hideaways stretched from floor to ceiling. For the use of reclaimed materials in vaults and pavements, see Mattei, “Elementi fittili,” and Zanchettin in this volume.

17. Coverly et al., “Hidden Mountain”; Alexander and O'Hare, “Waste and Its Disguises”; Stöger, “Geschichte(n) des Wegwerfens.”

18. A good overview of the historiography is Stöger and Reith, “Western European Recycling.” More well-rounded historical accounts include Reith, “Recycling im späten Mittelalter,” and Woodward, “Straw, Bracken and the Wicklow Whale.” For post-consumption discards and the concept of waste regimes, see Cooper, “Recycling Modernity,” 1118–1119.

19. Rübél, “Abfall”; Reimann, *Territories of Waste*.

20. Against this tendency, see Borgo and Ezra, “Discards by Design.” Another recent exception is Wagner, “Constant Change and Global Exchange.”

21. Roberts, “On Mis-Expertise.” On cleaning and wiping in the print studio, see Roberts, *Contact*, 124.

22. Cole and Pardo, *Inventions of the Studio*; Jacob and Grabner, *The Studio Reader*; Blazwick, *The Artist's Studio*; Esner, Kisters, and Lehmann, *Hiding Making*; Fowler and Nagel, *The Expanded Field of Conservation*.

23. Koerner, “Factura”; Kumler, “Materials, Materia, Materiality,” 112.

24. Liboiron and Lepawsky, *Discard Studies*.

fare no better. One notable exception comes from research into the late Titian, where technical analysis revealed his at times baffling parsimony. The aging artist, loath to waste materials even once flush, repeatedly adapted and expanded unsold canvas supports to undergird new commissions.²⁵

Economic and cultural historians characterize the early modern period as a golden age for recycling across Europe.²⁶ A rising person-to-resource ratio, coupled with religious reforms that praised work and technological change that accelerated it, ensured that there was “no limit to the ingenuity of [early moderns] in their exploitation of natural resources and agricultural by-products,” at least as Donald Woodward imagines it.²⁷ Brian Clapp, too, judges the recombination of by-products as “relatively more common in pre-industrial economies than they are [today].”²⁸ The reuse practices of the period were not just born out of necessity or scarcity, though, but also dictated by cultural expectations and norms; they would, in turn, become central to the development of the experimental sciences, as the emerging field of maintenance and repair studies teaches.²⁹ Colonization and the push toward industrialization eventually changed things.³⁰ To return to Augustine’s recut pen, a culture of maintenance work, codified in sixteenth-century calligraphy manuals, would by the nineteenth century give way to a culture of obsolescence—as much the product of abundance as incompetence.³¹ If quills never go out of stock, why learn how to repair them?

25. Dunkerton and Spring, “Titian after 1540,” 10.

26. Neumann, “Vormoderne Recycling-Mentalität?”; Reith, “Recycling im späten Mittelalter”; Walsham, “Recycling the Sacred”; Stöger and Reith, “Western Recycling in a Long-term Perspective”; Woodward, “Swords into Ploughshares.” For responses to resource constraints elsewhere, such as Tokugawa Japan (1603–1867), see Richards, *The Unending Frontier*, ch. 5. For equally frugal attitudes to workshop waste and the economic situation of craftspeople with regard to materials in late antiquity and the early Middle Ages, see Cutler, “The Right Hand’s Cunning,” 978; for medieval labor crises and waste, see Johnson, “The Poetics of Waste.”

27. Woodward, “Straw, Bracken and the Wicklow Whale,” 44.

28. The term “by-product” applied to the early modern period is strictly speaking an anachronism, as it has only been in English usage since 1857. Desrochers, “Invisible Hand,” 350; Clapp, *Environmental History of Britain*, 223. Clapp defines by-products more nearly as that which “arise[s] when complex materials, often but not always of organic origin, are broken down into their constituent parts, or recombine in a new way,” 220.

29. Casson and Welch, “Histories and Futures,” 36. For the need to “make use” as a motivation for experiment, see Werrett, “Food, Thrift, and Experiment,” 228; Werrett, *Thrifty Science*; Young and Coeckelbergh, *Maintenance and Philosophy of Technology*. See also Margócsy and Brazelton, “Techniques of Repair,” and the website <https://themaintainers.org/>.

30. For the emergence of a “Cornucopian Scarcity” mindset from the seventeenth century onward, and the related emergence of capitalism in early modern Europe, see Jonsson and Wennerlind, *Scarcity*, 8–9.

31. Finlay, *Western Writing Implements*, 10. For the relationship of obsolescence and expendability



2. Fanmaker’s waste, London, seventeenth century. Bone, ivory, tortoise shell, and shell palette. London, London Museum.

The intensity of salvage (meaning reuse in the same activity) and loop-closing (meaning inter-trade feedback) across the early modern world has left few of the period’s by-products extant today. Those that do surface, such as a cache of fan-making supplies from seventeenth-century London, tend to be declared failures: the struts were over- or under-cut, hence discarded (fig. 2).³² But what makes us so sure that, if workshop waste comes up in aggregate, it must have fallen down in the same quantity, produced by the same hand, or even in one go?³³ Maybe early modern craftspeople, like twenty-first-century scientists, kept at least some of their null results around for reference, offering up the too-thick and the too-thin as cautionary tales for their apprentices to study.³⁴

to modernity, see Packard, *The Waste Makers*; Tischleder and Wasserman, “Thinking out of Sync.”

32. Egan, “Archaeological Evidence,” 61, 65; Egan and Jeffries, “London, Capital of Empire,” 63.

33. Egan, “Archaeological Evidence,” 47–48.

34. Brazil, “Illuminating ‘the Ugly Side of Science.’”

In what follows, and in the essays that comprise this volume, we explore the rich potential of waste as a heuristic for the study of early modern material culture. We use “waste” to name a capacious category of secondary output, useless matter, and spare parts, knowingly straddling centuries and melding historical terminology with present-day intuition. Other authors in the volume adopt far stricter definitions, informed by etymology or theory.³⁵ The term waste comes from the Latin *vastus*, or void. Its Italian cognate *guasto* identifies a specific military practice that was widespread in the Renaissance as a strategy of preventative destruction: as a noun, *guasto* referred to clearing out terrain stretching from the city walls into the countryside to eliminate anything that could provide shelter to the besiegers and block the view of the battlefield.³⁶ As an adjective, *guasto* instead meant corrupted or spoiled; here, too, the larger semantic field points to loss and absence. Period dictionaries define *guastare* as taking away the form that is proper to something (“tor la forma, e la proporzione alla cosa”).³⁷ This is the adjective that Giorgio Vasari insistently uses in the *Lives* to describe artworks that have been damaged or are decayed—that are, in other words, *void* of their original form.³⁸

With a nod to Adolf Loos, we call our subject not waste *material* but waste *work*: “human labor, technical skill, and artistry.”³⁹ The appeal to “wastework” as a compound word builds on a similar move by historians who recently coined the term “modelwork” to emphasize the material-based production of models.⁴⁰ But our inquiry focuses less on what waste is *per se* and more on what waste effects and demands in the course of its collection, handling, management, storage, processing, and recycling. Waste is not just some assemblage of material things, but the set of practices these materials constantly solicit as well. As our contributors demonstrate, these operations are often best described at the level of a system, where relationships across space (spatiality) can be studied in tandem with the properties and affordances of matter (materiality).

35. For good summaries of waste’s shifting meaning in the English language from the Middle Ages to the present, including the problematic anachronism of assuming an equivalency with current usage, see Johnson, “The Poetics of Waste,” 461; Di Palma, *Wasteland*, 3–4. For its Italian cognates, see Crawshaw, *Cleaning Up Renaissance Italy*, 133. See also our pendant article, Borgo and Ezra, “Discards by Design,” for an extended treatment of the word and related terms.

36. TLIO, s.v. “guasto.” See also Capulli, “Displacement and Reconfiguration.”

37. *Vocabolario degli accademici della Crusca*, s.v. “guastare.”

38. Vasari, *Vite*.

39. Loos, “Building Materials,” 115. For further discussion of the essay, see Zanchettin in this volume.

40. Brückner and Isenstadt, “Introduction: Modelwork,” xi; Brückner, Isenstadt, and Wasserman, *Modelwork*. For waste and work, see Doherty and Brown, “Labor Laid Waste.”

Despite oscillations in terminology, waste is surprisingly consistent in its invisibility and ostensible disappearance. Vittoria Di Palma reminds us that waste’s “resistance to representation is at least as interesting theoretically as it is frustrating for the researcher.”⁴¹ Taken collectively, the essays in this volume counter the *invisibility* and inevitable loss of historical waste, recovering what was in fact its *ubiquity* across early modern creative environments. Waste is a little easier to see if we start on the ground. A fuller picture emerges when we gather the dust, count the labor, and envision the future.

From workbench to floor

From the German *Abfall* to the French *déchet*, the semiotics of waste are intrinsically rooted in a dynamic of verticality: as in Botticelli’s panel, waste becomes so on its descent from a work surface to the bin or ground beneath.⁴² The union of these two semantic fields, waste and ground, is further evident in words such as *runderatio*, the Latin term for floor, and *rudus*, or building waste. Detritus is, after all, what made up the Roman floor.⁴³

At times, nothing other than floor-level placement marks an object as waste. Ambiguities arise. The “unswept floor” motif (*asàrotos oïkos*) of ancient mosaics, known in the early modern period from descriptions in Pliny the Elder’s *Natural History* (XXXVI, 60, 184), shows debris from a rich meal that is not in itself dirty or repulsive.⁴⁴ A halved nut, a fig, sea urchins, shells, and cherries all could feature just as well on the surface of a banquet table, collected together in a still life arrangement (fig. 3). Left on the floor, these scraps become somewhat less delectable. The accidental nature of their fall and the growing urgency of their removal lend the *asàrotos oïkos* a provisional quality as fictive image that counters the durability of the mosaic structure. Yet the functional strength of the tiles *en masse*, as a composite surface, belies what vulnerabilities they each suffered individually, having previously been reduced to myriad shards. Recycling broken glass for tesserae

41. Di Palma, *Wasteland*, 11.

42. Borgo and Ezra, “Discards by Design.” For the spatial underbelly of the tailor’s shop, see Pitman, “Tailor’s Hell?”

43. See Zanchettin in this volume; Vitruvius, *De architectura* (VII, 1, 1–3). And waste could also make up the ceiling: in the sixteenth-century Palazzo Naselli Crispi in Ferrara, broken ceramic vessels are found in the vaults. See Mattei, “Elementi fittili.”

44. Fahy, “In the Guise of the Popular”; Thomas, *Art, Science, and the Natural World*, 191–202.



3. Aventine unswept room (detail), second century CE. Mosaic, width of frieze: ca. 40 cm. Vatican City, Vatican Museums.

was a common practice across the ancient world that continued into the early modern period.⁴⁵

Another, more conceptual way to approach waste from the ground up is to interpret the work/by-product binary as a figure/ground dichotomy. Waste, like figurality, is relational, enabling a “twofold” awareness of artifact and discard in terms of both space (negative/positive) and material (excess/remains).⁴⁶ Consider two further discards unearthed from sites in central London (figs. 4 and 5).⁴⁷ One, a scrap of sheet brass thrown down a well, carries the outlines of at least eight florets that an anonymous late fifteenth-century metalworker must have punched out in the course of fitting together a cheap belt; the other, a bone square, bears the void of a bored hole—its positive, likely the piece to a medieval game.⁴⁸ The use-value of both articles encouraged first circulation, then loss. What remains of the “figure” today

45. Schibille et al., “Something Old, Something New.”

46. This reading builds upon Richard Neer’s theorization of figure, itself formulated after the work of Richard Wollheim on pictorial representation. Neer, “Ornament, Incipience, and Narrative,” 204.

47. For disposal practices in late medieval and early modern London workshops, see Egan, “Archaeological Evidence”; Egan and Jeffries, “London, Capital of Empire”; Neumann, “Vormoderne Recycling-Mentalität?”; Werrett, *Thrifty Science*.

48. “Scrap, London Museum (Inv. no. 21111/61);” “Waste, London Museum (Inv. no. 86.107/10).”



4. Scrap metal strip from which six-petaled florets were cut, late fifteenth to early sixteenth century. Copper alloy, 33 x 33 mm. London, London Museum.



5. Waste bone quadrilateral with a large hole in the middle, medieval. Bone, 23 x 22 x 1 mm. London, London Museum.

is in each case mere circumscription. By contrast, and rather ironically, the surface that bears this outline (the “ground”) survives precisely because it was thought useless at the end of the production cycle and therefore tossed aside, languishing in the long-protected depths of a well or a buried cesspit. Once excavated, though, discarded grounds like the brass and the bone do not normally get to enter the archaeological record as stand-alone figures. Instead, they remain subservient to their still-missing positives, appearing in articles and books as the hatched negatives of reconstructive diagrams that hypothesize the manufacture of these losses.⁴⁹ In the visual display of data, it seems always to be ground, not figure, that stands for waste.

As Michel Serres writes, “Already the decision to exclude shows some adherences: an eventual return, a conservation. How can everything be expelled while keeping it [. . .]. The question is an economic one.”⁵⁰ Let us stay on the ground for a moment longer to extend Serres’s line of thought to the economy

49. Sewart, “The Waste Material,” 137, fig. 22; Rijkelijkhuisen, “Whales, Walruses, and Elephants,” 425, fig. 12.

50. Serres, *The Parasite*, 157.

of visual waste. In theory, the most efficient image is that which elides the figure/ground distinction altogether. What is negative space can also be positive, and vice versa. Tellingly, Douglas Hofstadter channels the language of waste studies to make this point: he defines a *cursively drawable* figure as “one whose ground is merely an accidental by-product of the drawing act.” By contrast, a *recursive* figure is “one whose ground can be seen as a figure in its own right”—which is to say, an image that admits of no by-products and thus leaves no waste.⁵¹ Can the *process* of wastework be recursive too?

One answer to this riddle, drawn from the early modern decorative arts, represents an economy of work and an economy of materials: *première-* or *contre-partie* marquetry.⁵² The two techniques, often executed together *en effect à double-jeu*, feature most prominently in eighteenth-century furniture and musical instruments produced in Germany during the Boulle revival (fig. 6).⁵³ Here a tortoise-shell, ebony, or brass figure, with a contrasting material serving as ground, is set next to the same but with the figure/ground relation swapped. Earlier methods of achieving the distinctive point/counterpoint design required that the repeat pattern be cut in multiple, painstaking steps. The process wasted time and labor. The eighteenth century, however, brought an important procedural innovation—the “sandwich” cut—and with it, a new efficiency: pendant materials were first fused together as sheets, then shaped in tandem.⁵⁴ The resultant figure/ground couplets were noticeably tighter in their join than the fit previously achieved with individually cut pairs. Think of the deconstructed sandwich, then, as the marquetry equivalent of M. C. Escher’s tiled-plane lithographs.⁵⁵ By-product is figure, but also ground; side-by-side, the two rhyme, *en effect à double-jeu*.⁵⁶ On the door of a cabinet as across the body of a viol, the work retains its waste.



6. Joachim Tielke, two doors from a showpiece cabinet, ca. 1703–1706. Ivory, tortoiseshell, gold leaf, silver, semi-precious stones and glass, veneered wood; cabinet: 90 x 103 x 46 cm. Oirschot (NL), Kollenburg Antiquairs.

51. Hofstadter, *Gödel, Escher, Bach*, 67–68. Emphasis in original. For recursive figuration and early modern painting, see Kim, *Groundwork*, 9–10.

52. For a good description of the Boulle technique and its development, see Graf and Huey, “Southern Writing Furniture,” 68–72.

53. Louwers, “A Showpiece Cabinet”; Hellwig and Hellwig, *Joachim Tielke*. For an interpretation of the techniques through Riegl’s aesthetics of ornament and pattern, see Graf and Huey, “Southern Writing Furniture,” 71–72. For another example of recursive marquetry, see the bass viola da gamba, ca. 1708, reproduced as cat. no. 474 in Historisches Museum Basel, *Historical Museum Basle*, 298.

54. Wilson, “Boulle,” 58; Graf and Huey, “Southern Writing Furniture,” 70.

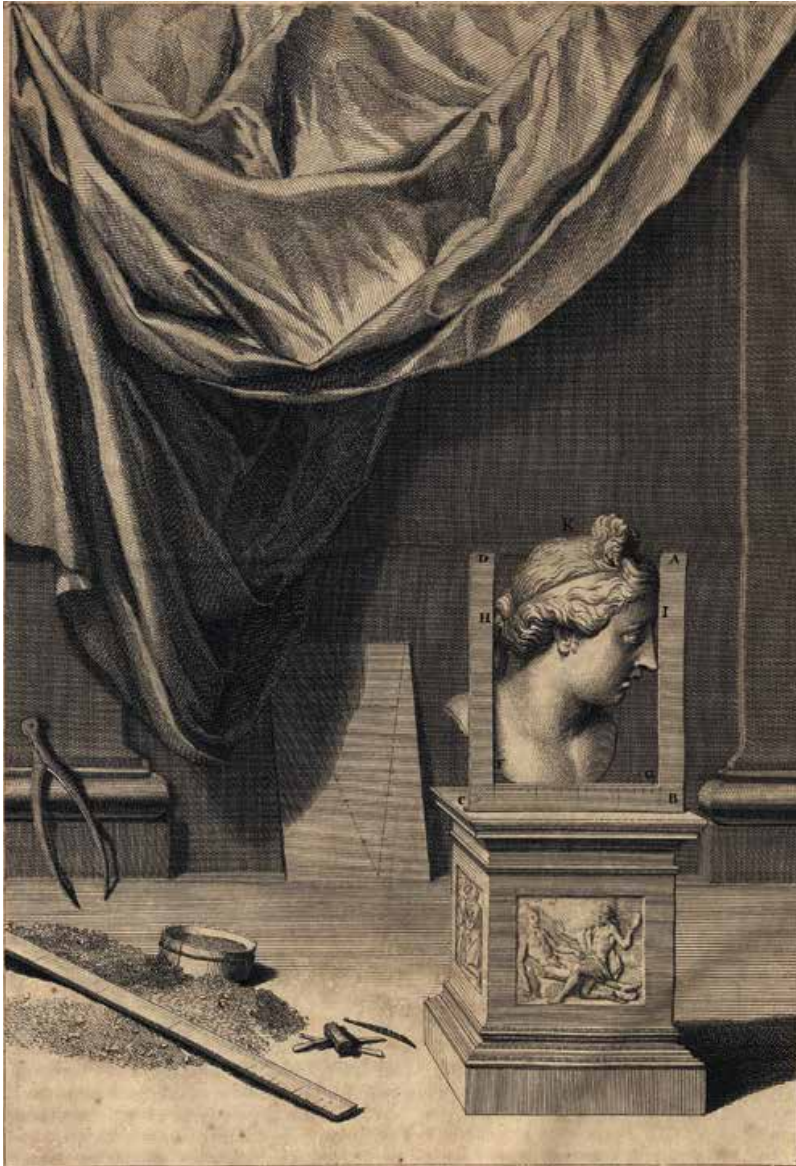
55. Hofstadter, *Gödel, Escher, Bach*, 68.

56. Wilson, “Boulle,” 57–58.

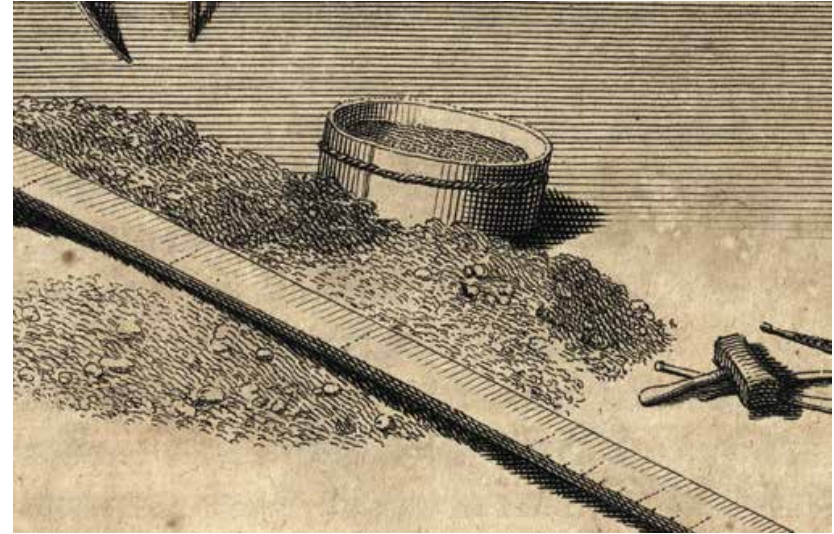
Reforming the formless

Waste that accrues on the ground without sufficient surface area to hold even the outline of a design we call dust.⁵⁷ When the French engraver Bernard Picart added this detail to his illustration for an early eighteenth-century English translation of Leon Battista Alberti’s *De statua* (fig. 7), he contrasted the contained form of a sculptural figure—a woman’s head seen in profile, raised on a pedestal and squared off for measurement along the perimeter—with an amorphous mass of three-dimensional ground: marble chips,

57. Ezra, “Recycling Iconoclasm’s Waste,” 353–354; Marder, *Dust*; Parikka, *A Geology of Media*, 87.



7. Bernard Picart, illustration to Alberti, *The Architecture of Leon Battista Alberti*. Engraving, 45.8 x 29.4 x 3.6 cm. Florence, Kunsthistorisches Institut in Florenz – Max-Planck-Institut.



7.1. Detail of fig. 7.

chiseled away and then heaped at left (fig. 7.1).⁵⁸ The ruler situated atop the pile on a diagonal betrays its uselessness, as the only way to quantify this waste is by weight or volume.⁵⁹ Both metrics are more easily obtained by looking not to the floor but back to the pedestal, where the negative space of the now-carved block can be determined through subtraction from the dimensions of its erstwhile whole.⁶⁰ The quality of the subtracted material must, however, be judged by another measure—particle size—and another instrument—the sieve, which appears alongside the pile.⁶¹

In the early modern material economies of both Alberti's and Picart's day, pulverized stone held value as an ingredient for the aggregates known variously as plaster and stucco.⁶² Alberti, in his treatise on architecture, takes

58. For another evocative suggestion of the relationship between ground and dust, durability and fragility, see Kim, *Groundwork*, 83–85.

59. On waste measured in weight, see Gagné on rags and Zolli on *spazzatura*, both in this volume. For weight as an undersung aesthetic criterion in the early modern period, see Kim, *Matters of Weight*.

60. For an invitation to interpret negative space as a creative presence in premodern artworks as well as in their historiography, see Fricke and Kumler, "Introduction."

61. For a metaphorical reading of the sieve, see Stinebring in this volume.

62. Gapper, "What Is Stucco"; Jakobieć, "Beyond Form and Fancy," 45–47. In the case of plaster,

pains to emphasize just how much the particle size of lithic dust (obtained through burning, chiseling, or crushing) matters when mixing plaster for construction. “As for Lime,” he writes, “they condemn that which when it comes from the kiln is not in entire lumps, but in broken pieces, and as it were in powder, and they say it will never prove serviceable.”⁶³ He goes on, “When the quality and nature of your stone requires your mortar to be more liquid or tractable [. . .] your sand must be sifted through a sieve; but when it is to be stiffer, then mix it with half gravel and broken fragments of stone.” The sieve in Picart’s engraving alludes to its dual role as a discard-saving and a discard-sorting device. As such, the tool reifies what attention both sculptors and quarrymen paid first to the acts of salvaging and then to that of separating the dust of their work for future use. Any stone that made it through the wire netting could always reverse course, falling up by being thrown back into the iterative feedback loops of aggregative making.⁶⁴

One might furthermore interpret the marble dust piled on the floor of Picart’s illustration as a cautionary reminder of the risk posed by *troppo levato*, or “the impossibility of correcting mistakes made on the marble block through removing too much material.”⁶⁵ This is a *paragone* argument, often employed to demonstrate the higher level of difficulty facing the sculptor in contrast to the painter. Francesco da Sangallo, for example, stressed that the sculptor had the challenge of needing to walk such a thin line between work and waste, the one turning too easily into the other through imprudent chiseling; Agnolo Bronzino, in his own remarks on the same topic, rather invokes Alberti’s maxim of measure twice, cut once (i.e., the model and the marble, then only the marble) as a way to diminish the risk of *troppo levato*. To follow Bronzino, then, the pile on the floor of Picart’s engraving would represent discards removed by design, not accident.⁶⁶

Dust that lingered in early modern workshops could be picked off the ground and grouped together to form new figures, and new wholes. The modesty of particulate by-products, to say nothing of their volatility once airborne, belies

which gained esteem as a sculptural material in the eighteenth century, dictionaries of the arts like John Barrow’s *Dictionarium Polygraphicum*—published only a few years after the English translation of Alberti—advised those looking to cast figures that “[a]ll the art is to chuse good plaister in stone, that there may be no coal among it; it ought to be well burnt, well pounded, very white, sifted through a fine sieve,” as cited in Baker, “Shifting Materials,” 174.

63. Alberti, *The Architecture of Leon Battista Alberti*, bk. 3, ch.4, 45.

64. Borgo and Ezra, “Discards by Design.”

65. Thomas, “‘Artefici’ and ‘huomini intendenti,’” 46.

66. Thomas, “‘Artefici’ and ‘huomini intendenti,’” 46, 49; Borgo and Ezra, “Discards by Design.”



8. Philip Sidney, *The Countesse of Pembrokes Arcadia* (London, 1598), detail of title page with pounce. Washington, DC, Folger Shakespeare Library.

what was in fact great generative potential. After separation—the work of the sieve, sorting fragment from dust, artifact from remains—came aggregation. This is waste as proto-pixel. The overall effect could be mimetic, as when powdered wool (flock) was sprinkled over late fifteenth-century woodblock designs to create the impression of a textile woven on paper.⁶⁷ Proto-pixels could also be functional, as was the case with pounce, a powder composed in the early modern period at least of sand, biotite, or, as the name suggests, the leftover filings of pin-makers.⁶⁸ When dusted over ink, pounce acted as a blotting agent that soaked up liquid while adhering to, and therefore obfuscating, the written word. Any significant massing of its glittery spangles soon overwhelmed the underlying figuration of language. The effect was not entirely unwelcome. The powder’s material agency as a “corrective” seems to have encouraged its secondary use as a decorative flourish. Blotting and then bedazzling text while doubling as an eraser, pounce turned the wasted work of manuscript error into ornament, an

67. This was likely achieved through a sieve, as above. Hind, *An Introduction*, 1:172–173; Scheld and Damm, “Flock Prints and Paste Prints.” For the recycling of wool shearings more broadly, see Scapecchi in this volume.

68. Finlay, *Western Writing Implements*, 32–34.



9. Hourglasses (quarter, half, three-quarter, and hour) from a courtroom, with metal (tin) sand, sixteenth century. Frame: 78.4 x 132 x 44.6 mm. Basel, Historisches Museum Basel.

ostentatious display of disappearance much in contrast to the invisibility now promised by modern white-out (fig. 8).⁶⁹

Metal filings could be measured not only in weight but also in the time it took craftspeople to amass them.⁷⁰ To calculate how many pins must be manufactured to fill a sprinkler's worth of blotting sand, one must ask how many hours of work yield the requisite waste—in other words, the labor-efficiency ratio of a secondary production cycle. Yet however inefficient it was to collect, metallic dust held uncommon potential as a loop-closer: it could recycle the very time it stole from laborers. A judicial clock now in Basel shows how tin waste acted as a kind of sand in four hourglasses (fig. 9).⁷¹

69. Blake, "Pounced Corrections."

70. See Zolli in this volume.

71. For hourglasses and waste, see Ezra, "Recycling Iconoclasm's Waste," 354–355.

The device rather ingeniously constructs a temporal economy out of a circular one. Grain separates from grain as it falls; upon landing, the individual particulate forms disappear into the aggregate formlessness of spent time. In retrospect, these experiments in zero-waste chronometry take on an important proto-museological function as well. Given how few historical by-products survive today, their glass bulbs double as vitrines for the display of waste. The only thing transient about their once-ephemeral filings is the time they continue to keep.

In the early modern world, gathering the dust of labor for the purpose of collective study was another means of turning discards into the stuff of exhibition. The same metal refuse that flows from top to bottom in the bulbs of the Basel clock turns up among the entries in Nehemiah Grew's inventory of the Royal Society's late seventeenth-century repository.⁷² Grew lists "CRUDE TIN powder'd, consisting of shining black and Iron-colour'd Grains" and "CHIMNEY-TIN, forced up from the Herd. 'Tis black shining and heavy; almost like very fine black sand," either of which could blot the text of a scribe wishing to make his wasted words shine.

From waste to wastework

Wasting practices and the history of labor were inextricably connected in premodernity much as they are today.⁷³ In the late medieval and early modern period, "waster" was a pejorative term reserved for "anyone who refused to labor for the good of the community."⁷⁴ Those who acted against the interest of smaller collectives, like households and workshops, met with similar scorn. Documentary evidence of master-apprentice relationships attests to the particularly low esteem accorded to a trainee found squandering time and skills. Take, for example, the well-known drawing from ca. 1522–1524 attributed to Antonio Mini and annotated by Michelangelo, his teacher.⁷⁵ The master's response to the pupil's particularly poor draftsmanship comes by way of a chiding phrase, "Draw Antonio, draw Antonio, draw and don't waste time" (*Disegna antonio disegna antonio / disegna e no[n] p[er]der te[m]po*). Archives from other trades record

72. Grew, *Musaeum Regalis Societatis*, 328–329.

73. Doherty and Brown, "Labor Laid Waste."

74. Johnson, "The Poetics of Waste," 469.

75. British Museum, London, 1855,0514.818. Chapman, *Michelangelo*, 23, 61.

a similarly low tolerance among guild members for the injudiciousness of their new recruits. In 1482, when York carpenters set the terms for pastoral payments, they ordained that any guild member “shall truly live upon his alms and his own goods, without waste or giving away of them”; by 1719 joiners in Newcastle were free to fine apprentices who “wasted or embezzled [their] master’s goods.”⁷⁶

In search of an early modern iconography to match these sentiments, one need look no further than the increasingly unflattering personifications of two vices related to waste: sloth and poverty.⁷⁷ Ilja M. Veldman writes that in northern Europe during the sixteenth century, “slothfulness was seen as sinful, those unwilling to work being cast out of society as paupers”; in the same period, poverty shook off any remaining medieval connotations of virtue to emerge as a trait judged “self-inflicted through indolence.”⁷⁸ Warnings about squandering time, delivered in one-on-one training, found wider audiences when circulated in popular images that touted labor and diligence as upright moral qualities.

These images argue that waste must be properly dealt with—diligently, even ethically—by laborers so that nothing is ever really wasted. The viewer confronts here the ambivalence of the notion and its polysemy across word and image. Waste is not just what gets discarded after consumption or left over after manufacture; it is also something prior, the very input (or lack thereof) to a production cycle. This input is judged “wasted” if insufficient for the task at hand. Resources that are squandered waste away. Negligence and slothfulness are thus particularly harmful and damning qualities when they apply to the mishandling of raw materials, an inefficiency that threatens to create waste before production even begins.

One series, *The Use and Abuse of Time*, cut by Crispijn de Passe the Elder after Maarten de Vos, envisions with alarming specificity the kind of worldly deprivation a life of negligence and inactivity was sure to bring forth. In the last print of four, poverty is personified as a bedraggled woman, her dress torn (fig. 10). She sits among the ruins—the waste—of some counterfactual industriousness; there are reminders of wool unwound, food unprepared, and pots unwashed. As Time looms over her shoulder, his scythe poised to strike, she has run out of road, never to repair what lies broken around her.

76. Woodward, *Men at Work*, 82, 57.

77. On sloth and waste, see Johnson, “The Poetics of Waste,” 468.

78. Veldman, “Images of Labor,” 260. For overturned baskets as an attribute of squanderers—so-called pilgrims to the mythical *Sint Reynuit* (Saint Clear Out, or completely empty)—in northern art, see Pinson, *The Fool’s Journey*, 168–169, 173; Vries, “The Changing Face of Realism,” 218.



10. Crispijn de Passe the Elder after Maarten de Vos, *Misery and Poverty*, from *The Use and Abuse of Time*, ca. 1600. Engraving, 216 x 253 mm. Amsterdam, Rijksmuseum.

In her person as much as in her attributes, she delivers a warning to those “guild members [who] [. . .] are compelled either to wander the earth as beggars [. . .] or constantly to lie in dread of disastrous misfortune,” a message reiterated in the print’s accompanying text.⁷⁹ It is a fitting end to the De Vos series, yet the depiction of broken crockery, damaged spinning wheels, and strewn furniture is all the more striking for how it stands at odds with what became, in seventeenth-century Dutch prints, the similarly moralizing convention of showing an artisan’s workshop swept clean—that is, devoid of the dust, occasional filth, and other broken odds and ends a truly descriptive representation of the space would abide.⁸⁰ In the well-run workshop, waste

79. Veldman, “Images of Labor,” 249, translation at 249n87.

80. For the trend toward representation of an “idealized, orderly” workshop, see Kettering, “Men at

must be rendered invisible: collected, contained, sorted, stored, and classified. This is all part of the labor wastework demands.

Waste and labor come together even more transparently in another series of popular images: the depictions of itinerant tradesmen drawn by Annibale Carracci during the late 1580s and printed in Rome in 1646 by Lodovico Grignani, when titles were first added.⁸¹ There is a wasteworker among the group of tradesmen, and he is labeled *cariolaro da mondezza* (fig. 11).⁸² The word *mondezza* identifies both the cleanliness that results from his work (from the Latin *mundus*) as well as its exact opposite, the dirt and filth taken away in the process. In early modern Europe, refuse left to linger in civic squares was believed to pose a significant threat to public health, contaminating the air with disease-inducing miasmas. Although urban waste disposal was not yet a clearly delineated public function, municipalities could still rely on sanctioned street cleaners. Over the course of the sixteenth and seventeenth centuries in Venice, these grew to be increasingly specialized professions. Cleaners were appointed to clear drains (*gattolieri*), dredge canals (*cava rii*), or collect rubbish (*scoazeri* or *nettadori*). Working at dawn or during nighttime, these workers came equipped with the tools of removal required: shovels, brooms, baskets, and barrels.⁸³

Carracci's *mondizaro* fares significantly worse than the other eighty characters in the series. More a beggar than a salesman, he is the only one who appears not just barefoot but with bare knees and elbows as well. As if to reiterate that his is a business of the ground, the domain of waste, he is the only figure in the group not depicted in an erect posture. Instead, he crouches on the floor with bent head, his attention trained on the formless mass he is collecting rather than meeting his potential buyers at eye level. Unlike his companions—all street vendors loaded with trinkets and wares—he brings nothing and sells nothing, consigned to removing materials with his barrel. His is a work, a livelihood, of subtraction rather than addition, and something of the pressure and expectations of this diminution has rubbed off on his scarcely clad figure. Reduced to the point of invisibility, the *mondizaro*'s trade only becomes noticeable when it breaks down, as with

Work," 699, and for "workaday mess that is present but under control," 701.

81. Carracci, *Diverse Figure*.

82. On the series, see McTighe, "Perfect Deformity." See also Brambilla, *Ritratto*, where the wasteworker is labeled *mondizaro*.

83. See Crawshaw, *Cleaning Up Renaissance Italy*, 133–157. For wasteworkers outside Venice, see Reid, *Paris Sewers and Sewermen*; Stuart, *Defiled Trades*, 102–104.



11. Simon Guillain, after Annibale Carracci, "Rubbish Hauler," plate 49, *Cariolaro da Mondezza*, from *Le Arti di Bologna*, 1646. Cambridge, MA, Harvard Art Museums/Fogg Museum.

another highly subtractive act, the strike—the most conspicuous withdrawal of work whose result, paradoxically, is accumulative: waste.⁸⁴

From the past to the future

In Albrecht Dürer's *Rest on the Flight into Egypt*, the toil of Carracci's *mondizaro* is child's play (fig. 12). A team of putti helps assemble in the foreground of the scene. Like little *scoazeri* or *nettadori*, they serve as rubbish collectors, busily filling a wicker basket with the discards of Joseph's ongoing labor. One cherub crouches at center with his arms full of splintered wood; held at a perpendicular, the bundle suggests the shape of a tau cross. In form as in material, the load of timber offcuts foreshadows the device and event of Christ's crucifixion.⁸⁵

Here typological associations extend to wastework.⁸⁶ Once packed up by the putti and taken away in a basket, the refuse of Joseph's carpentry shop might well have provided kindling to fuel the Holy Family's humble stove. This potential conversion of discard to heat aligns with the waste management industry's current strategy of pursuing "waste-to-energy" (WTE) as an efficient pathway for disposal. Judging by its future incineration, though, the waste in Dürer's print foreshadows another fire: the odious inferno to be encountered at the Last Judgment. To hell in a wastebasket! Dürer, like so many of his contemporaries, saw the future in the past and the past in the future.⁸⁷

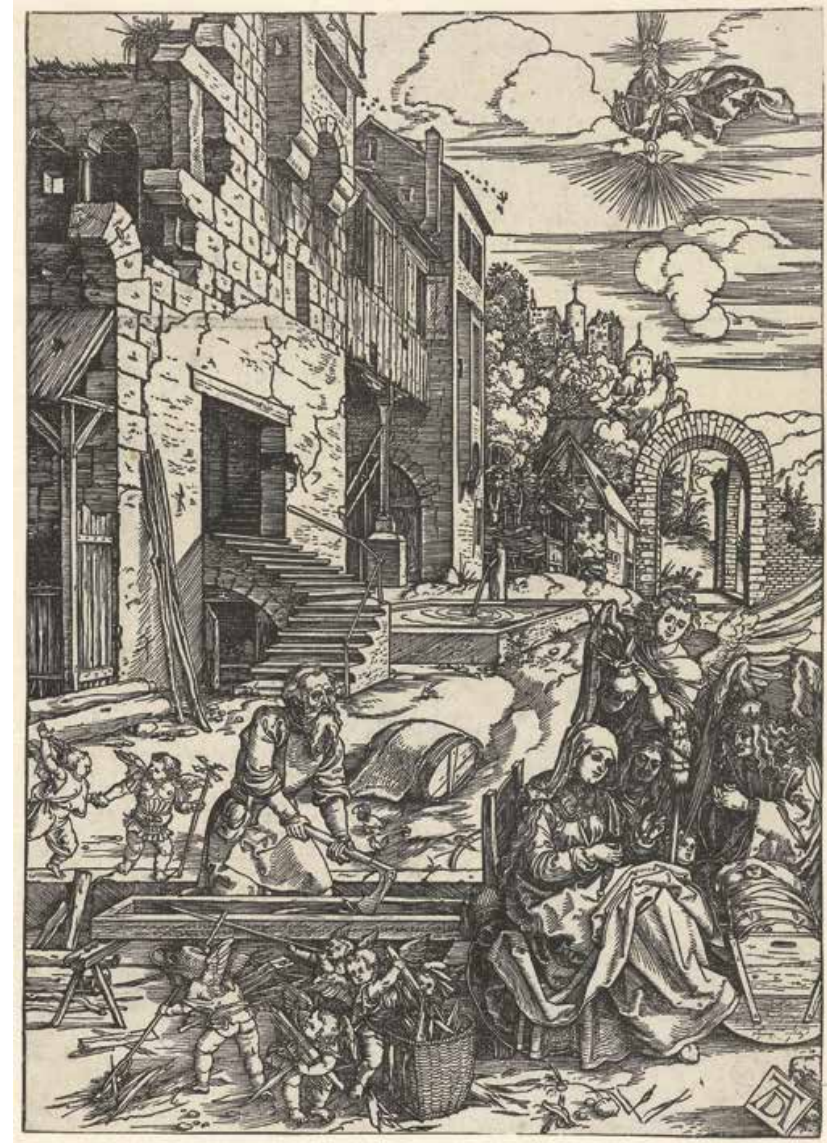
To manage waste is to manage the future. By the nineteenth century, the notion arose that a future generation might one day be harmed by, and thus come to judge, the action (or inaction) of present society. The same anticipatory guilt lent a moral imperative to conservation practices then being developed across the landscapes, cityscapes, and museum collections of Europe and America. The hetero-temporality of industrialized modernity, with its

84. On the visual implications of today's waste emergency, see Armiero, *Wasteocene*, esp. 38–39.

85. Hahn, "Joseph," 518, 520n20.

86. From Tertullian onward, Christian theologians had long relied on typology as an exegetical framework capable of linking the Old and New Testaments. Artists in turn used the simple but effective strategy of formal comparison to give visual expression to the typological accords of written theology. See Auerbach, "Figura (1938)."

87. For an extended explication of the putti as "droll reminders of hellfire" and symbols of the transition from the Old to New Covenant, see Hahn, "Joseph," 518–519.



12. Albrecht Dürer, *Rest on the Flight into Egypt*, from *The Life of the Virgin*, 1500–1504. Woodcut, 299 x 211 mm. Amsterdam, Rijksmuseum.

coincident clash of past and present, is also credited as an impetus for the institutionalization of heritage management, or what Rodney Harrison calls a “future-making practice.” Today the circular economy—that ultimate ideal of reuse ambition—is likewise described as an “imagined future,” one perhaps best approached through the lens of social future studies, a similarly oriented field of research.⁸⁸ In architecture, metabolic thinking has, of late, shifted conversations away from “future proofing” as the mitigation of decay and toward more optimistic strategies for harnessing “growth time.”⁸⁹ While durability remains a desideratum, so-called “cultivated waste materials” promise to grow atop buildings as the structures age, at once prolonging the event of construction and eliding it with the process of wasting away.⁹⁰

Often presented as polar opposites, waste and heritage deal with our future material inheritance. The issue of durability haunts them to the same degree, inspiring scenarios that range from the apocalyptic to the utopian, from threat to promise. A key outcome of the two is a spatial rearrangement. Both are defined by practices of boundary maintenance and of containment within a suitable repository. Archive and wastepit are, after all, equally essential as sources for historical inquiry.⁹¹

Waste and heritage are outcomes of the difficult decisions one faces daily when assessing what to preserve and what to let go. As such, they stand as material testaments to the practices of ordering and classification by which individuals and societies adjudicate between collection and disposal, wanted and unwanted, salvation and loss. These are the polarities that underpin the editorial series *DIS/APPEARANCE*, which presents the work of the Lise Meitner Group *Decay, Loss, and Conservation in Art History*, based at the Bibliotheca Hertziana – Max Planck Institute for Art History in Rome. The group’s inaugural conference, *WASTEWORK*, convened in March 2023 and gave rise to this volume.

WASTEWORK anchored an annual initiative on waste (2022/23) that proposed to study early modern making and material culture through acts of disposal, displacement, removal, and abeyance. Arguing for a fundamental

engagement with the material impermanence of artifacts, this approach brings together two ways of thinking about art, putting memory of the past and imagination of the future in fluid exchange. Focusing on the long-gone, the present volume nonetheless offers proposals for the not-yet: in reimagining the discarded past, the following essays test the usefulness of contemporary formulations and apply the lessons of emerging fields to explore possible futures for the historical humanities.

In recent years, with the growing emphasis on the materiality of objects, art historians have increased their efforts to explore matter and its affordances. Responding to a call to move from materiality to materials, many scholars no longer prioritize finished artifacts over the qualities and stories of their constitutive elements; while these persist and re-form, the objects they outlast are by contrast fleeting aggregations.⁹² As a result, processes of de-materialization, un-making, de-composition, re-cycling, and re-generation now lie fully within the purview of art historical inquiry and demand a proper archival, theoretical, and critical framing. Existing well before and well after the fabricated artifact, waste epitomizes these processes. Both feeding into and resulting from manufacturing, it exemplifies the dynamic, iterative, and cyclical aspects of matter and materials, making and consumption.

In our own households, we most often think of waste and recycling in terms of materials: we have separate disposal flows for aluminum, glass, and PET plastic, and within glass, green, brown, or white. We separate the foil cover for the yogurt from the plastic cup, then remove the cardboard wrapper. Compelling histories of waste can and have been told in terms of single materials—the advent of plastic chief among them in contemporary literature—but a departure from thinking about waste strictly in these terms can defamiliarize the automatic action of everyday sorting and move us beyond that level of explanation to think about waste more relationally, the chief lesson of discard studies.

The three shifts outlined in this introduction—workbench to floor, form to formless, waste to wastework—recur in the chapters that follow. These essays train the focus of art historical attention on the ground, that exemplary site of residual material where waste is swept up and thriftily regenerated. We travel along a horizontal axis from the sweepings of metal filings in Florentine metalworkers’ shops (Zolli) to the wool shearings or *cascame*—literally “the fallen”—of the textile mill (Scapecchi), via the building rubble

88. Casson and Welch, “Histories and Futures of Circular Economy,” 36.

89. Hebel, Wisniewska, and Heisel, *Building from Waste*, 153.

90. Hebel, Wisniewska, and Heisel, *Building from Waste*, 152.

91. Harrison, “Heritage as Future-Making Practice”; Harrison, “Legacies”; Thompson, *Rubbish Theory*. On waste’s future, see also Di Palma in this volume.

92. Ingold, “Toward an Ecology of Materials”; Ingold, “Materials against Materiality.”

that makes up the floors of early modern Venice (Zanchettin), down into the underground tunnels of coal mines (O'Rourke). Other authors catch materials on their descent into formlessness, whether that be through the processing of mutable and metamorphic pasteboard (Razzall) or the fermentation of the grassy shrub of indigo (Linds), or else in the manufacture of dye from human and animal by-products (Coulardot). Finally, the labor that underpins all these transformations emerges as a subject in itself. Work is personified by the ragpickers who represent social waste on the streets of early modern European cities (Gagné) and playfully inverted in the rejection of the female body's fertile productivity in Dutch genre painting (Stinebring). It is further made visible through the labor required to maintain and store stage machines and scenographic designs in Renaissance Florence (Addona).

A history of discarding is necessarily a history of choice. We acknowledge that while we selected contributions across a range of disciplines, we narrowed our geographical purview to European and colonial North American territories. While focusing mainly on well-established sites of art historical attention—among them Florence, Venice, Antwerp, Paris, and London—these essays radically widen the list of actors on the scene of making to include wool shearers and dyers, chemists and apothecaries, enslaved laborers and miners, workshop assistants and family members. What is more, the list of materials our contributors tackle hardly reads as familiar. In place of the usual panel, canvas, marble, or bronze, they recover wax and metal filings, wool shearings and bast, pasteboard and rags, animal and human waste, building rubble and mining gases. These are the protagonists in our stories from the early modern cutting room floor.

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