SPECIAL REVIEW

Leonardo Da Vinci's Codex Leicester: A New Edition; The Codex. Domenico Laurenza and Martin Kemp, eds.
Leonardo Da Vinci's Codex Leicester vol. 1. Oxford: Oxford University Press, 2019. 84 pp. $32.95.

Leonardo Da Vinci's Codex Leicester: A New Edition; Interpretive Essays and the History of the Codex Leicester. Domenico Laurenza and Martin Kemp, eds.
Leonardo Da Vinci's Codex Leicester vol. 2. Oxford: Oxford University Press, 2019. xvi + 242 pp. $130.

Leonardo Da Vinci's Codex Leicester: A New Edition; Transcription and Translation. Domenico Laurenza and Martin Kemp, eds.
Leonardo Da Vinci's Codex Leicester vol. 3. Oxford: Oxford University Press, 2019. x + 322 pp. $130.

Leonardo Da Vinci's Codex Leicester: A New Edition; Paraphrase and Commentary. Domenico Laurenza and Martin Kemp, eds.
Leonardo Da Vinci's Codex Leicester vol. 4. Oxford: Oxford University Press, 2020. 320 pp. $130.

The Codex Leicester is exceptional in many ways. Compiled roughly between 1505 and 1508, at the peak of his productivity as a theorist, it is Leonardo da Vinci's most ambitious writing on water and cosmology. It is also the only manuscript by Leonardo in private hands and the only one conserved outside of Europe. To nonspecialists, however, it is perhaps best known for its acquisition history. "Purchased," declares its eighteenth-century frontispiece, "with the great power of gold," the Leicester's history has been long linked to its trade value. This statement continues to ring true with its most recent sale in 1994: bought by Microsoft founder Bill Gates for a staggering $30.8 million, the Codex holds the record for one of the most expensive written works ever sold. In the last forty years, it was auctioned twice by Christie's, each time to relieve a cash-strapped institution. First in 1980, when the trustees of the Holkham estate sold it to oil-magnate Armand Hammer, who grandly renamed it "Codex Hammer"; then again in the record-setting auction of 1994, when it went from UCLA's Armand Hammer Museum of Art to Bill Gates, who reinstated its historic name. In both sales the Codex served as a de-accessioning sacrificial lamb: recommended for sale and immolated by its designation as the object least integral to the collection.

In May 1994 Carlo Pedretti, then the Armand Hammer Professor of Leonardo Studies at UCLA and director of the Armand Hammer Center, stepped out of his

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teaching upon hearing that a team of museum professionals tasked with evaluating the Hammer Museum holdings had identified the manuscript as "the single work whose loss would have the least impact on the core identity of the collection" ("Rush to Auction," *New York Times*, 26 November 1994). Pedretti lashed out against the perceived "problem of narrowness" of Leonardo studies in the pages of the *Achademia Leonardi Vinci* journal, asking polemically, "Is an Art Museum no place for a Leonardo Codex?" (*ALV* 8 [1995]: 250; *ALV* 9 [1996]: 211). Indeed, the circumstances of the sale resonate strongly in today's climate, following the economic upheaval brought about by the pandemic, and amid debates sparked by the relaxation of the Association of Art Museum Directors guidelines on diverting de-accessioning proceeds to cover operating expenses. But the Leicester sale also speaks volumes about the status of Leonardo: a name as exceptionally lucrative as it is isolated—or conveniently isolable.

Together with the 2017 pre-auction publicity for the *Salvator Mundi*, Christie's single-lot catalogue for the Codex Leicester could be used to teach a whole university course in Old Masters marketing. More interesting still would be a historiographic overview of approaches to Renaissance sources taught through a side-by-side comparison of all editions of the Codex, print and digital, published thus far. The Leicester is certainly not unique among Leonardo's written corpus in boasting more than one scholarly edition (the Atlanticus, Arundel, and Forster, for example, each have a couple), but it is certainly the most effective in offering a sensitive seismograph of cultural and scientific change. Covering a span of over one hundred years, the editorial history of the Codex is fascinating in itself; it ranges from digital projects that promise to transcend the object's material limitations to drastic changes in the physical configuration of the text, as the Codex was unbound in 1981 and now appears as a series of eighteen bifolios, mounted flat within two sheets of Perspex.

Because Leonardo filled in this bundle of loose sheets separately, often without apparent logic, and then kept rearranging and editing them, this is also a story about the long scholarly struggle to master a contradictory and disorderly body of knowledge, to index an erratic text, and to order in a linear sequence material that has no clear beginning nor end. It is a story about complex editorial decisions: about layout and typographic experiments aimed at preserving all that might be lost in the shift from manuscript to print (including the topographic relation of words and images); about the exponential growth of peritextual features (glossaries, concordances, bibliographies, appendixes, etc.); about the challenges of translating a scientific terminology that appears here for the first (and sometimes only) time. Finally, it is a story that shows how differently we negotiate between the needs of specialist and nonspecialist readerships, and between the expectations of different disciplines: the Leonardo of the art historians, that of the historians of science, and—at the pinnacle of expertise and, for some, narrowness—the Leonardo of the Leonardo scholars.

The new, lavish four-volume edition of the Codex Leicester by Oxford University Press offers by far the most comprehensive study of any Leonardo manuscript to date.

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Building on the previous two print editions by Gerolamo Calvi in 1909 and Carlo Pedretti in 1987, it reaches a unique degree of penetration. The editorial program comprises a facsimile, a volume of interpretative essays, a transcription and English translation by Domenico Laurenza, and a final tome with paraphrase and commentary by Martin Kemp. Unlike previous editions of Leonardo writings—traditionally the heroic and solitary effort of a single editor—this one is, refreshingly, a collaborative enterprise. The project brings together two scholars of equal dexterity and with complementary skills, combining the paleographic expertise and philological rigor of Laurenza with the critical strength and interpretative confidence of Kemp. The latter's commentary exudes precision, lucidity, and pragmatic self-reliance. It is a forceful lesson that much remains to be done by asking what, exactly, Leonardo is telling us, an exercise not to be confused with the deciphering of his handwriting.

Here too, the edition offers important new contributions. To solve the riddles posed by many problematic passages, Laurenza collated the text with its eighteenth-century copies. Their unrecognized circulation and impact on the new science of geology is mapped here for the first time. Indeed, in the Leicester's account of the past, present, and future of the earth—and the place of human history within it—there is much to offer scholars working on concepts like deep time and the Anthropocene. So much so that, with the present edition solving major accessibility issues, it would not be surprising to find Leonardo being quoted more extensively and meaningfully than ever before in the field of environmental humanities.

Examining previously unnoticed stylus indentations and the offsetting of fresh ink, evocatively characterized as "the topography of the smudges" (3:322), the authors confirm that Leonardo filled in these folded, interleaved sheets separately and then kept editing and rearranging them, inserting and removing bits over time. They tentatively propose an original order of compilation, but unlike previous editions they resist the temptation to attribute special significance to each small trace—be it fingerprint, ink stain, or ghost drawing. Instead, Kemp and Laurenza do not explore these incidents myopically for their own sake, but rather for their larger implications. Based on paleographic and physical evidence, they compellingly differentiate between an "inner set" of eleven sheets focusing on hydraulics, characterized by a more uniform layout and a list-like compilation of empirical observations, and an "outer set" of seven sheets on geology and astronomy, where text and images are more irregularly arranged and the tone more theorical (2:15–16). This distinction matters beyond the Codex's own history because it sheds light on the connections Leonardo established between visible and invisible phenomena: here, between the behavior of water in motion, the topic of the inner set, and its role in shaping two domains that remain largely out of sight, the center of the earth and surface of the moon, to which the outer set is dedicated. In applying empirical observations about hydraulics to cosmological and terrestrial matters that could not be observed directly, we see Leonardo probing the power of visual imagination—a word we are little accustomed to encounter in connection to science.

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This is just one piece of further evidence of the editors' deft ability to zoom in and, equally importantly, zoom out. So much so that the edition could be said to live in four volumes and on two planes: the fine grained, minute analysis and the view from ten thousand feet, suited to grasp phenomena that elude close observation—a paradox at the heart of much Leonardo research. The relationship between the microscopic and the broader context here becomes the organizing principle of the account as we move gradually away from "the Codex Leicester 'In Itself'" to its largely unrecognized scientific legacy (vol. 2, parts 1 and 2) and, on a parallel track, from the transcription (vol. 3) to the paraphrase and commentary (vol. 4), where Kemp sets the Codex in the context of Leonardo's thought as well as against the background of ancient and medieval science. This should not be mistaken for some naïve, positivist effort to make all the pieces of the puzzle fit together. The authors do not lay claim to Leonardo as a totally intelligible phenomenon and do not remove any of the obstacles interfering with their conclusions, but rather leave them open to debate. Both the evidence and lack thereof are readily presented in such a way as to allow readers to make their own judgments. Expressions like "we suspect," "we strongly doubt," "it is unclear," "these problems need further study," recur throughout.

In volume 2, Laurenza offers the first systematic, comprehensive reconstruction of Leonardo's geological theories. He is at his best here, and readers familiar with his landmark study of Leonardo's anatomy (*De Figura Humana* [2001]) will recognize his profound ability to craft arguments that are as ambitious as they are solid and well balanced. Particularly strong is the comparison Laurenza draws between two parallel changes in anatomy and geology: on the one hand, the transition from humoral to anatomical medicine; on the other, the shift from previous conceptions of the world dominated by qualitative notions and fluid elements (air and water) to Leonardo's geological vision, which focuses above all on the solid forms of the earth and their mechanical interaction with water. Morphological parallels between processes of fossilization and bronze casting—which are here finally explored in depth, including the significant overlaps in vocabulary—will be of great interests to historians of sculpture. In early modern studies, we are also witnessing a nascent lithic Renaissance, with increasing interest in processes of mining and extraction in the work of scholars such as Ivano dal Prete, Monica Azzolini, Philip Usher, Christopher Heuer, Bronwen Wilson, Hannah Baader, and Shira Brisman, among others. Laurenza's work greatly contributes to this discussion.

Perhaps as a reaction against the pervasive myth of Leonardo as the forerunner of modern science, specialized scholarship has characteristically shied away from any attempt at reconstructing the circulation of his writings among scientists. Examining for the first time all known manuscript copies of the Leicester, this edition demonstrates its previously uncharted circulation in Rome, London, Paris, Naples, and Weimar, as well as its scientific legacy. It is admittedly difficult to reach beyond a generic chronological convergence and demonstrate the Codex's actual impact. While some links (those with Leibniz or Sloane, for example) remain slightly elusive, others are

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meticulously documented and will enable future scholars to push forward in this direction. Remarkable pages of Laurenza's final essay are devoted to the Leicester's role in catalyzing the transfer from Milan to Paris of manuscripts A-M in 1796 under Napoleonic rule, to the unknown role played by Sebastiano Resta in the Codex's circulation, and to Thomas Coke's copy, whose analysis reveals an ongoing debate on mirror script and the epistemological status of left-right image reversal.

The present edition departs from its predecessors in more ways than one, but three structural differences are apparent at first glance. After the Codex's unbinding, Pedretti published the text as it appears on each bifolio and in a right-to-left sequence (fol. 1^{r} precedes 36^{v}; fol. 36^{r} precedes 1^{v}; etc.), to comply with what is generally considered to be Leonardo's default mode of compilation. In reverting to the page order of the bound Codex, Kemp and Laurenza afford more serious consideration to what must have been the author's preferred format. After all, Leonardo did nestle these sheets together, spine into gutter, to assemble a unit, and although their stitching perhaps postdates Leonardo, it nevertheless reflects his intention to have his manuscripts in a bound, ordered state; frequent editorial comments, revisions, and apologies for the lack of order point to a redaction in progress. With seventy-two pages devoted to one central topic—water and its role in shaping the body of the earth—the Leicester is certainly an achievement when compared to earlier, more fragmentary notebooks. In two of the accompanying essays (2:7–73), Kemp helps to see this more clearly by focusing on the search for an order that was in the process of being formulated, rather than on the errancy so often overplayed in popularizing accounts of Leonardo's so-called creative chaos.

In the never-ending quest for balance between faithfulness to the original text and its intelligibility, this edition introduces a second novelty by experimenting with a unified transcription, a midway solution between the critical and the diplomatic. Its criteria are briefly outlined in an in introductory note (3:vii). This is perhaps too brief: while the reader is informed that some spellings are modernized and that abbreviations and conflations of words are resolved, the editors do not clearly spell out what this implies in terms of punctation and capitalization, as well as for the frequent pentimenti, cancellations, and elisions of letters (which one finds dutifully indicated in the footnotes to the transcription). In remaining attuned to the needs of the modern reader, they acknowledge that some of their choices might be open to question and deem this an experiment that "courtesy of the future e-edition of this work, can subsequently be improved or adapted" (3:vii).

Transcription styles are an age-old debate in the philological study of Leonardo manuscripts. In her monumental 2019 Yale monograph, Carmen Bambach made a strong case for choosing the most conservative course of action, opting for a strict diplomatic transcription as adherent as possible to Leonardo's page, to achieve an equally balanced archaeology of image and text, thus matching the approach she employs when examining paintings and drawings. The first edition of the Codex Leicester in 1909

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offered a double transcription (critical and diplomatic), a no-compromise solution that soon after was adopted for the Edizione Nazionale of Leonardo's writings. To get closer to the original text, readers of this edition can certainly rely on the accompanying photographic reproduction, though they are perhaps not best served by the glossy paper of the facsimile volume. While this aspect will certainly be improved in the future e-edition, the quality and functionality of the 1987 Giunti facsimile in the meantime remains unsurpassed: because the bifolios are kept loose to replicate the physical features and format of the original document, they can be readily rearranged and interleaved as Leonardo did, to test different sequences.

The compression into a unified transcription is compensated by the third novelty this edition offers: its expansion into a full paraphrase and commentary. This fourth tome is exemplary for its expositional clarity and vivid writing, which appears to have taken up some of the visual and empirical character of Leonardo's own prose, so that, for example, when explaining a rather impenetrable passage on the behavior of heavy bodies thrown across the water, Kemp puts their motion forcefully *ante oculos*: "Thus, as generations of children have discovered, a stone thrown with a low, skimming trajectory will bounce across the surface of the water, before sinking it diagonally" (4:13). While the paraphrase is an aid to the modern reader, it also serves, in effect, as a powerful interpretative tool. The commentary further hones our understanding of the text by setting Leonardo's ideas in context. Crucially, it also reconstructs the sequence of compilation of each single folio, so that, while the text in the paraphrase is given according to the place it occupies on the page, the commentary reconstructs the place it holds in the unfolding of Leonardo's thought. It is difficult to fully do justice to Kemp's work here without resorting to extensive quotations. Against all odds, given the complexities of its content, this is a text that speaks to the general reader with flair, and—I can report, having tested it in the classroom—makes the Leicester finally accessible to students of Leonardo at all levels.

The irony that the Leonardo codex owned by the founder of the largest software company in the world has been newly published in a print edition is not lost. As a resource of over five thousand pages of nonlinear thinking, Leonardo manuscripts lend themselves exceptionally well to study in a digital context. Upon purchasing the Codex, Gates commissioned Corbis—a corporation he founded in 1989 that specializes in digital imaging—to make a CD-ROM edition of the Leicester, subsequently released in 1996. This appears to be the basis of what is currently known as the Codescope, a piece of software unfortunately only installed in kiosks at temporary exhibitions in conjunction with the real Codex, often detrimentally diverting all attention from the original handwritten pages to glowing screens. Despite its paradoxical lack of accessibility, the Codescope's design—a circular page selection interface and built-in reading-glass function—is a clear step forward when compared to other digitized versions of Leonardo's writings currently available. The forthcoming e-edition that Kemp and Laurenza promise to deliver will necessarily deal with this cumbersome predecessor;

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hopefully, they will be allowed to do so by building on it. In print or on screen, we will be thinking with the Leicester for a long time to come.

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