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FROM FABLE TO EMBLEM:
THE MECHANICS OF WORDS AND IMAGES IN LEONARDO'S PERSONAL LIBRARY

by

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ABSTRACT OF THE DISSERTATION

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My dissertation centers on Leonardo da Vinci's compositional methods in his drawings and writings, and investigates their relationship with scientific diagrams and mechanical principles. Taking my cue from recent scholarship in art history and visual culture—such as W.J.T. Mitchell, Leonard Barkan, and Marco Ruffini—I identify the main sources for Leonardo's development of visual and written narratives in the books belonging to his personal library. Subsequently, I analyze recurrent patterns in Leonardo's folios featuring fables, emblems, and engineering projects, and examine the convergence of his use of empirical, diagrammatic, and pictorial strategies toward the investigation of nature. I argue that in order to represent tensions between nature and artifice, Leonardo applies notions of mechanics to his fables, and structures them on a binary scheme that displays simultaneously the causes and the effects of a situation. Then he develops his fables into emblems, which are synthetic texts condensing written and pictorial material, modeled on the same binary structure. By deeply engaging with both visual and textual elements in Leonardo's manuscripts, my study reveals the intimate links between scientific knowledge and humanistic thought across his *oeuvre*.

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PREFACE: BLOTCHED PAPER

*L'inchiostro displezzato
per la sua nerezza dalla bianchezza
della carta, la quale da quello
si vede imbrattare.*

*Vedendosi la carta tutta macchiata
dalla oscura negrezza dell' inchiostro,
di quello si dole; el quale mostra a essa
che per le parole ch'esso sopra lei compone
essere cagione della conservazione di
quella.¹*

The ‘dark blackness of the ink’ marks the *recto* of folio 27 from the Codex Forster making its way through few images of mechanisms sketched in red chalk. The text scrupulously empties any free space of the paper allowing the antecedent drawings to be half-seen—as words do not have the courage to completely efface images. The ink unravels in two beautifully written blocks that become visual shapes. The drawing of a line and two little circles signals the text conclusion. It is Leonardo’s fable 4, in which the paper laments of being blotched by the ink, and then realizes that written marks are the only reason for its preservation.

Leonardo will later elaborate the fable into a ‘silent’ emblem—a picture of a pen and an inkwell accompanied by an empty paper scroll. He probably crafted this image for his friend and poet Baldassarre Taccone, as the label *BT* suggests: the most elementary drawing tools are then called to signify poetry.² Leonardo’s reference to ink as a menial device that makes words eternal

is particularly significant in respect to his obsessive marking of sixty-five hundreds of sheets with texts and drawings. Furthermore, the stress of his pen on the paper's whiteness recalls the mechanisms at the core of invention: the fear of the empty page to be filled up with valuable thoughts, and the need to mark the page as a way to approach the world.³

Considering the multifaceted materials displayed by Leonardo's sheets, one gets the sense that connections between words and pictures are accidental or deeply subconscious, rather than purposeful, as a wide branch of scholarship in the field, including Kenneth Clark and David Rosand, has claimed.⁴ In addition, the 'mythical' use of Leonardo promoted by scholars such as Giovanni Battista Venturi and Fritjof Capra has favored the exaltation of grand artistic and scientific achievements as representative of the public face of Leonardo's production, much to the detriment of his sketches, notes, and unfinished works.⁵ I argue, instead, that every element on the page in Leonardo's manuscripts is in relation to the others, and that their interaction enabled him to make sense of the complexity of nature in both visual and textual terms.

Leonardo's embodied practice of jotting down notes in the shape of words and images activated and secured his thought. As Robert Zwijnenberg observed:

The fragmentary and chaotic nature of the manuscripts must have had a functional value for Leonardo in giving form to and in elaborating his ideas and thought about science and art.⁶

Situated within the longstanding word-and-image debate in art history and literary studies, my work considers Leonardo's *oeuvre* in its textual and visual forms as pertaining to both the realm of the 'sayable' and the 'visible.'⁷ Drawing upon W.J.T. Mitchell's association of pictures and

propositions as artificial signs at the basis of thinking, I regard any manipulation of signs (such as imagining, looking at an object, writing, and drawing) as the expression of thinking in both words and images.⁸

Instead of reading past the chaotic character of Leonardo's notes, I concentrate on it, and consider both the 'factual content' and the 'tangible form' of his thought traced across his manuscripts.⁹ From this perspective, Leonardo's fragments of fables are not just drafts for future written developments, but forms in relation, whether the artist knows it or not, with the scientific diagrams that over time layered beside them. Similarly, emblems are not only a codified genre with a clear audience belonging to the high culture crowd, but—as Karen Pinkus argues—pictographs belonging to the repertoire of images that circulated in the early modern workshop.¹⁰ These conglomerates of words and pictures that belong to different discourses, such as fables, emblems, and scientific diagrams, are in dialogue primarily because they are found on the same page.¹¹

Modern anthologies of Leonardo's manuscripts, such as Charles Ravaisson Mollien's *Le Manuscrits de Léonard de Vinci* (Paris, 1881-90) and Jean Paul Richter's *The Literary Works of Leonardo da Vinci* (London, 1883) began to appear around 1880, together with scientific scholarship on Leonardo, including Séailles (1892), Müntz (1899) and Solmi (1908).¹² The increasing diversification and specialization in the analysis of Leonardo's manuscripts produced comprehensive catalogues and collections of essays focusing on his scientific-technical projects

(Galluzzi, 1987, and Nanni, 2014); paintings and drawings (Marani, 1989, Zöllner, and Bambach, 2003); and literary writings (Marinoni, 1952, and Vecce, 1992).¹³

Between the 1940s and 1980s, excellent studies by Erwin Panofsky, Ernst Gombrich, and Carlo Pedretti on both scientific and artistic aspects of Leonardo's research were published.¹⁴ The gradual access to his works and the possibility to compare his creative and scientific projects signaled a fresh scholarly interest in the relationship between art, science and technology in Leonardo's *oeuvre*. As a result, the last century witnessed a huge spread of major scholarly contributions on the 'interdisciplinary Leonardo'—among them, Giovanni Gentile, Cesare Luporini, and Leonid Batkin—sounding the philosophical component of this interaction.¹⁵ Even more recently, scholars have attempted to examine Leonardo's thought by connecting his activities as scientist, engineer, inventor, and artist—I particularly refer to Martin Kemp (1981), and Claire Farago (1992).¹⁶ In the face of such prolific works mingling aesthetic and scientific research, we should now be reluctant to study Leonardo's *oeuvre* in separated areas of knowledge.¹⁷

Nevertheless, wholly transdisciplinary research (literary, artistic, philosophical, technical-scientific) is still needed to initiate dialogue about this multifarious material, as well as to enlighten Leonardo's reasoning concerning different compositional forms found in his notebooks and collections of loose leaves. Fabio Frosini and Alessandro Nova's international conference *Leonardo on Nature*, held in 2013 at the Kunsthistorisches Institut in Florenz, introduced a significant change in Da Vinci studies by promoting collaborative projects across

disciplines with the aim to reconstruct Leonardo's philosophical thought and the sources of his creative process.¹⁸ Heavily grounded in practical training in the visual arts and literary analysis, and supported by discussions with experts in the history of science, philosophy, and engineering, my work is situated within this new direction in Leonardo scholarship. By focusing on both 'form' and 'content' of his annotations, it uses an early modern approach and interprets Leonardo's various fields of analysis as a crossing of disciplinary borders.

My study sets aside the hierarchical schema of the "Renaissance," intended as the cultural rebirth or reawakening of the earlier, "classical" era, and proposes a holistic reading of Leonardo's *oeuvre*, as opposed to reflecting on Leonardo as an artist or a scientist. I employ Marco Ruffini's philological approach in his reexamination of Vasari's *Lives* to assert the cultural value of art and the artwork, rather than a celebration of individual, artistic genius.¹⁹ Following the methodology used by Leonard Barkan in his study of Michelangelo's sheets, I draw connections between every element on the page of Leonardo's manuscripts, taking into consideration his doodles, marginal notes, workday memos and writing drafts, regarding everything as equally relevant. I look at how Leonardo expresses himself in each word and picture on the pages of his manuscripts, in order to make sense of the artist's aims and different combinatory devices.²⁰

My dissertation asks the following questions: What is Leonardo's method in combining words and images? What are the archetypes and purposes of this combination? What brings Leonardo to interlace words and images in the form of emblems? How does scientific

knowledge intersect humanistic thought in the production of new forms of inquiry in his speculation? By answering these questions, I reevaluate Leonardo's work as part of an interdisciplinary project, using artistic and scientific methods for the investigation and the interpretation of natural processes.

In my dissertation, I analyze the interactions between words and images as reflected in Leonardo's manuscripts and books from his personal library. This work explores the manner in which Leonardo combines images and words in his folios and investigates their relationship with scientific diagrams and mechanical principles. I aim to define the relation of verbal and visual inscriptions in Leonardo's technical-scientific and literary-artistic projects and identify the sources of this interaction in the books contained in his personal library. Taking my cue from recent scholarship in art history and visual culture—such as W.J.T. Mitchell, Barkan, and Ruffini—I analyze recurrent patterns in Leonardo's folios featuring fables, emblems, and engineering projects, and examine the convergence of his use of empirical, diagrammatic, and pictorial strategies toward the investigation of nature. By deeply engaging with both elements in his manuscripts, this work reveals the intimate links between scientific knowledge and humanistic thought across his *oeuvre*.

I develop my arguments across three thematically distinct chapters. By surveying the lists of words and images contained in the Codex Trivulzianus and the Royal Collection, the first chapter argues that Leonardo gathers words and images to create a unique textual and visual language made of figurative, literary, and scientific components. I catalogue a selection of words

and images according to their semantic and visual properties, and verify their occurrences in Leonardo's literary and scientific texts, in order to show the development of this textual and visual language into more complex narratives. Drawing on databases and multi-archival research conducted at major European and American collections, this chapter also explores the books featured in Leonardo's personal library, and identifies the main sources for his development of written and visual narratives. I present a case study on Pliny and Aesop, which I consider the main sources for Leonardo's development of his fables, emblems, and more advanced written and visual narratives. Finally, I compile a survey of volumes in order to identify Pliny's and Aesop's editions to which Leonardo might have referred, and eventually locate the actual books belonging to his personal library.

Building upon these premises, Chapter Two furthers my inquiry by centering on five clusters of fables and emblems, which I examine in relation to scientific studies featured on the same sheets. I argue that Leonardo structures his fables on a binary model derived from his studies of mechanics to display simultaneously the causes and the effects of a situation. Then he develops his fables into emblems, which are synthetic texts condensing written and pictorial material, modeled on the same binary structure. By surveying sixteenth century emblem treatises, I subsequently locate Leonardo's development of fables into emblems in the broader context of early modern emblem theory. I argue that Leonardo's fables are at the basis of later documented emblems; and that his emblems are modeled on motifs and sources customary of the time—such as natural properties of plants and Aesopic fables. I claim that Leonardo's preference for

mechanical devices is out of the ordinary; moreover, his scientific-technical knowledge is a unique feature integral to the translation of his fables into emblems.

In the final chapter, I propose a reading of Leonardo's fables and emblems as derived from his reasoning on the mechanical arts. Through the analysis of visual narratives applied to technical-scientific projects by Mariano Taccola and Giuliano da Sangallo, I argue that Leonardo's combination of artistic and literary devices with studies of mechanics is not an isolated case in early modern workshops. Additionally, I claim that Leonardo's employment of fables allows him to tie together his technical and artistic skills, empirical observation and experience, in order to show the mechanical interaction of forces at the basis of every physical phenomenon. Finally, his transformation of fables into emblems results into the creation of 'mechanical metaphors.' Through these metaphors, Leonardo investigates and represents natural transformations and, at the same time, ennobles the work of the artist-technician.

My dissertation includes an appendix composed of three sections. The first section, entitled *Textual Models*, concerns the examination of the structure of Leonardo's fables according to a binary scheme illustrating the causes and the effects of a situation, which I called 'cause-effect model.' Section Two, entitled *Analytical Drawings*, focuses on the drawing tables which I composed in order to study Leonardo's visual and textual narratives in the form of fables and emblems. Finally, the third section, entitled *LILeo Digital Project*, illustrates the Omeka digital library site, which I launched in collaboration with the Rutgers Digital Humanities Laboratory. With this site, I created an open source web-publishing platform for the cataloguing

and display of Leonardo's personal library items, and the reconstruction of his creative process that interlaces words and images in the form of emblems.

By conducting a comparative, interdisciplinary analysis of his different modes of investigation, my work questions origins, influences and filiations in Leonardo's *oeuvre*, and provides original insights for early modern research on intertextual languages. My study intends to contribute to the new approaches in the digital humanities and combine them with digital model technologies and promotional techniques developed by art research centers and media companies such as e-Leo.²¹ As part of my dissertation project, I use these approaches to inform the development of innovative artistic methods in contemporary art, to expand the work of the online digital archives of Leonardo's manuscripts, and to make original sources of early modern culture available to a wider public.

¹ Leonardo da Vinci, Cod. For. III, fol. 27r; Leonardo da Vinci, *Scritti letterari*, Augusto Marinoni, ed. (1952, repr. Milan: Rizzoli, 2009), n. 47. "The ink is despised for its blackness by the whiteness of the paper, which finds itself blotched by it. / Seeing itself stained all over by the dark blackness of the ink, the paper complains to the ink. But the ink observes that the words it forms are the reason the paper is preserved." Transl. David Marsh, *Renaissance Fables: Aesopic Prose by Leon Battista Alberti, Bartolomeo Scala, Leonardo da Vinci, Bernaldino Baldi* (Tempe, Arizona: Arizona Center for Medieval and Renaissance Studies, 2004), 281.

² Interestingly, Karen Pinkus employs Torquato Tasso's dialogue on the *impresa* to underlie that "instruments used in engraving or printing the *impresa* are simply not fitting for the poet, not to mention the scalpel or the hammer with which inscriptions are sculpted into marble. So, although the emblematic form bears a certain relation to poetry, the instrumental nature of the required tools flatly deprives it of the necessary dignity." Cf. Karen Pinkus, *Picturing Silence: Emblem, Language, Counter-Reformation Materiality* (Ann Arbor: University of Michigan Press, 1996), 171-72. See also Torquato Tasso, quoted in Paola Barocchi, *Scritti d'arte del Cinquecento* (Milan: Riccardo Ricciardi, 1971-77), 38-39.

³ Robert Zwijnenberg, *The Writings and Drawings of Leonardo da Vinci: Order and Chaos in Early Modern Thought* (Cambridge: Cambridge University Press, 1999), 7.

⁴ In regard to Leonardo's sketches, the art historian Ernst Gombrich claimed that they were just unconscious 'doodles.' Accordingly, Sigmund Freud and Laurence Simmons interpreted Leonardo's sketches as the expression of his interior life. In this perspective, they thought that the artist's hand had a consciousness of its own, capable of bypassing the mind. Kenneth Clark spoke about Leonardo's pictures as "images his hand created when his attention was wandering" as evidence of an unconscious process. Similarly, David Rosand defined Leonardo's drawings as the "handwriting of the self" and considered the repetition of figures in the artist's manuscripts not as preparatory drawings or studies for his projects, but as a restless activity. Cf. Leonard Barkan, *Michelangelo: A Life on Paper* (Princeton: Princeton University Press, 2011), 2, 9-10.

⁵ Paradigmatic of the celebration of Leonardo inventor promoted in 1700 is Giovanni Battista Venturi's *Essay sur les ouvrages physico-mathématiques de Léonard de Vinci, avec des fragments tirés de ses manuscrits, apportés de l'Italie: lu à la première classe de l'Institut national des sciences et arts* (Paris: Duprat, 1797). Cf. also Gilberto Govi, *Saggio delle opere di Leonardo da Vinci, con ventiquattro tavole fotografiche di scritture e disegni tratti dal Codice Atlantico* (Milan: Tito di Giovanni Ricordi, 1872). As Fabio Frosini and Alessandro Nova noted, one of the most recent examples of the 'mythical' use of Leonardo is Fritjof Capra's book *The Science of Leonardo: Inside the Mind of a Great Genius of the Renaissance* (New York, Doubleday: 2007). Cf. Fabio Frosini and Alessandro Nova, *Leonardo da Vinci on Nature: Knowledge and Representation* (Venice: Marsilio, 2013). In his unsurpassable book *La mente di Leonardo*, Cesare Luporini already observed how nineteenth century revisionism of Leonardo's image as a romantic genius merged into a gradual reconsideration of the notion of Renaissance—*Rinascimento Italiano*, in particular—as the most innovative epoch and generator of modernity. Indeed, Leonardo dealt with most of the problems that came to define present-day culture: nature, science and scientific methods, experiment, machines, work and its impact on humanity, art as a cognitive and realistic method, and the relationship between art and science. Cf. Cesare Luporini, *La mente di Leonardo* (Florence: Sansoni, 1953), 4-6, 117-54. See also Marco Ruffini, *Art Without an Author: Vasari's Lives and Michelangelo's Death* (New York: Fordham University Press, 2011). A recent initiative for the reassessment of Leonardo's image as 'universal genius' can be found in the symposium *Leonardo 39: La costruzione di un mito*, held at the Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci on January 18, 2018.

⁶ Zwijnenberg, *The Writings and Drawings*, I.

⁷ My assumption is derived from Gilles Deleuze's discussion of the relationship between 'content' and 'form' as both having a 'substance' which define, respectively, a 'field of sayability' and a 'place of visibility.' Cf. Gilles Deleuze, "Strata or Historical Formations: The Visible and the Articulable (Knowledge)," in *Foucault*, Seán Hand, transl. and ed. (London: Continuum, 2006), 41-58. On the notion of 'form' in relation to thought, and on the ways in which language and visuality are interdependent in the Renaissance, see Leonard Barkan, *Unearthing the Past: Archeology and Aesthetics in the Making of Renaissance Culture* (London: Yale University Press, 1999); Leonard Barkan, et al., *The Forms of Renaissance Thought: New Essays in Literature and Culture* (New York: Palgrave Macmillan, 2009).

⁸ In his discussion of verbal and visual imagery, W.J.T. Mitchell draws upon Ludwig Wittgenstein's advice to consider mental and physical images as belonging to the same category. According to

Mitchell, both pictures and propositions are artificial signs at the basis of thinking, which is, in fact, “the activity of working with signs both verbal and pictorial.” In this respect, I also refer to Michel Foucault’s notion of forms migrating from one field of representation to another. Cf. W.J. Thomas Mitchell, *Iconology: Image, Text, Ideology* (Chicago-London: University of Chicago Press, 1987), 17-18, 26; Michel Foucault, *The Order of Things* (New York: Vintage, 1970), 17-45. See also W.J. Thomas Mitchell, *Picture Theory: Essays on Verbal and Visual Representation* (Chicago: University of Chicago Press, 1994); W.J. Thomas Mitchell, “Word and Image,” in *Critical Terms for Art History*, Robert Nelson and Richard Shiff, eds. (Chicago: University of Chicago Press, 1996): 51-61; Michel Foucault, *This is Not a Pipe* (Berkeley-Los Angeles: University of California Press, 1970); Peter Wagner, *Icons – Texts – Iconotexts: Essays on Ekphrasis and Intermediality* (Berlin: Walter de Gruyter, 1996).

⁹ Cf. Zwijnenberg, *The Writings and Drawings*, I, 8.

¹⁰ Karen Pinkus problematizes interpretations of Renaissance emblems that privilege the discursive component of the emblem as the interpretive key of the visual: “A text is supposed to provide information about some painterly enigma.” Her argument does not aim to place the visibilia over writing in a new hierarchy. Pinkus suggests a reconsideration of images at the center of humanism in order to understand how “in a general and a theoretical sense the explicit values and implicit ideologies of humanism are expressed in the visual.” Furthermore, she also addresses the compactness of time expressed in emblems as reflecting the unity of time and drama of Aesopian fables. The essence of emblems lies in their capacity to express the simultaneity of the depicted actions, to make events simultaneous—regardless of their political destination. Cf. Pinkus, *Picturing Silence*, 160, 162, 166-67, 171-73. In his *Mute Poetry and Speaking Pictures*, Leonard Barkan underlies a very interesting parallel between fabular and pictorial narratives: “Indeed, the very choice of *favellare*, which derives from *fabula*, serves to remind us of the burdens of iconography, that most fundamental system whereby text is implicated in picture: what does an artist have to do in order that an uncaptioned image succeed in telling its necessarily language based story?” Leonard Barkan, *Mute Poetry, Speaking Pictures* (Princeton: Princeton University Press, 2013), 13. See also Giovanni Pozzi, *La parola dipinta*, Milan: Adelphi, 1981; David Freedberg, *The Power of Images: Studies in the History and Theory of Response* (Chicago: University of Chicago Press, 1989); Andrea Pinotti, *Estetica della pittura* (Bologna: Il Mulino, 2007).

¹¹ Barkan perfectly outlines the possibilities of transdisciplinary studies on word-and-image: “It is not the disciplines which needs to be exchanged, but the objects: there is no question of ‘applying’ linguistics to the picture, injecting a little semiology into art history; there is a question of eliminating the distance (the censorship) institutionally separating picture and text. Something is being born, something which will invalidate ‘literature’ as much as ‘painting’ (and their metalinguistic correlates, ‘criticism’ and ‘aesthetics’), substituting for these old cultural divinities a generalized ‘ergography,’ the text as the work, the work as the text [...]. Word-and-image, in short, comes down to us as a subject of rational inquiry or a reliable taxonomic grid so much as a particularly shifty trope. My notion here is to address the life of this figure—the term figure itself being a word-and-image metaphor—in a manner that is simultaneously rhetorical and historical, theoretical and aesthetic.” Barkan, *Mute Poetry, Speaking Pictures*, xv. On Leonardo’s word-and-image combinations see Carlo Vecce, “Leonardo e il gioco,” in *Passare il tempo. La letteratura e il gioco dell’intrattenimento dal XII al XVI secolo: atti del convegno di Pienza, 10-14 settembre 1991* (Rome: Salerno, 1993), 296-316; Carlo Vecce, “La parola e l’icona. Dai

rebus di Leonardo ai 'fermagli' di fabricio Luna." *Achademia Leonardi Vinci: Journal of Leonardo Studies and Bibliography of Vinciana* 8 (1995): 173-83; Carlo Vecce, "Marinoni e le parole di Leonardo dagli appunti grammaticali e lessicali ai rebus, in 'Hostinato rigore.' *Leonardiana in memoria di Augusto Marinoni*, Pietro C. Marani, ed. (Milan: Electa, 2000): 96-102; Carlo Vecce, "Parola e immagine nei manoscritti di Leonardo da Vinci," in *Percorsi tra parole e immagini*, Angela Guidotti and Massimiliano Rossi, eds. (Lucca: Maria Pacini Fazzi, 2000): 19-35; Carlo Vecce "Word and Image in Leonardo's Writings," in *Leonardo da Vinci: Master Draftsman*, Carmen Bambach, ed. (New York: Yale University Press, 2003): 59-78.

¹² Cf. Charles Ravaisson Mollien, *Le Manuscrits de Léonard de Vinci: Manuscrit A-M et Ashburnham I-II de la bibliothèque de l'Institut de France*. 6 vols (Paris: Quantin, 1881-91); Jean Paul Richter, *The Literary Works of Leonardo da Vinci* (London: Sampson Low: 1883); Gabriel Séailles, *Léonard de Vinci, 1452-1519: l'artiste et le savant: essai de biographie psychologique* (Paris: Perrin, 1892); Eugène Müntz, *Léonard de Vinci, l'artiste, le penseur, le savant* (Paris: Ernest Thorin, 1892); Edmondo Solmi, "Le fonti dei manoscritti di Leonardo da Vinci. Contributi," *Giornale Storico della Letteratura Italiana* 10.11 (1908): 25-7.

¹³ Cf. Pietro C. Marani, *Leonardo: catalogo completo dei dipinti* (Florence: Cantini, 1989); Leonardo da Vinci, *Scritti Letterari*, Augusto Marinoni, ed. (1952, repr. Milan: Rizzoli, 2009); Leonardo da Vinci, *Scritti*, Carlo Vecce, ed. (Milan: Mursia, 1992); Paolo Galluzzi, *Leonardo da Vinci: Engineer and Architect* (Montreal: Montreal Museum of Fine Arts, 1987); Carmen Bambach, *Leonardo da Vinci: Master Draftsman* (New York: Yale University Press, 2003); Frank Zöllner, *Leonardo da Vinci 1452-1519: tutti i dipinti e i disegni* (Köln: Taschen, 2003); Romano Nanni, *Leonardo and The Artes Mechanicae* (New York: Skira, 2013).

¹⁴ Cf. Erwin Panofsky, *The Codex Huygens and Leonardo da Vinci's Theory of Art* (London: Kraus, 1940); Ernst H. Gombrich, "The Form of Movement in Water and Air," in *Leonardo's Legacy. An International Symposium*, Charles Donald O' Malley, ed., Berkeley-Los Angeles: University of California Press, 1969), 131-204; Carlo Pedretti, *Leonardo: A Study in Chronology and Style* (London: Thames and Hudson, 1973).

¹⁵ According to Gentile, artistic and scientific features in Leonardo's thought appear incompatible. As an artist, Leonardo sought the infinite, while as a scientist he aimed to measure, weight and number each *datum*. Luporini also underlined this contradiction by arguing that Leonardo's spiritual character unusually coexisted with his sperimentalism and "idealismo matematico" ('mathematical idealism'). Along these lines, Marcel Brion used Leonardo's technique of *non finito* to explain his artistic and scientific tensions as part of the same enterprise: "Lo spirito di Leonardo è strutturato come una gigantesca spirale, che gira di continuo attorno a se stessa [...]. Alberti aveva dei confini, come pure Michelangelo, Leonardo invece è inafferrabile, e per comprenderlo, bisogna coglierlo e afferrarlo dovunque." This rethorical image perfectly outlines the desire to uncover the more hidden aspects of Leonardo's *oeuvre*, and finally dissolve the problematic distance between art and science in his output. Cf. Giovanni Gentile, *Il pensiero di Leonardo* (Florence: Sansoni, 1941), 9-10, 23-26, 29-33; Cesare Luporini, *La mente di Leonardo* (Florence: Sansoni, 1953), 11-16; Marcel Brion, "L'homme unique," in *Leonard de Vinci* (Paris: Hachette, 1959), 7-53; Leonid M. Batkin, *Leonardo da Vinci* (Bari: Laterza,

1988), 18-20.

¹⁶ Cf. Martin Kemp, *Leonardo da Vinci: The Marvellous Work of Nature and Man* (London: Dent, 1981); Claire J. Farago, *Leonardo da Vinci's Paragone: A Critical Interpretation with a New Edition of the Text in the Codex Urbinas. Brill's Studies in Intellectual History. Vol. 25* (Leiden: E.J. Brill, 1992).

¹⁷ Ernst H. Gombrich's essay "The Form of Movement in Water and Air" signals the beginning of art historical scholarship on Leonardo that extends into the history of science realm. Cf. Gombrich, "The Form of Movement in Water and Air," 131-204. Exemplary of more recent scholarship that links perspective and mechanics, and art and science is Martin Kemp's book (*Leonardo da Vinci: The Marvellous Work of Nature and Man*, 1981). See also the important books by Frank Ferenbach: *Licht und Wasser. Zur Dynamik naturphilosophischer Leitbilder im Werk Leonardo da Vincis* (Tübingen: E. Wasmuth, 1997), and *Leonardo da Vinci: Natur im Übergang. Beiträge zu Wissenschaft, Kunst und Technik*. Munich: W. Fink, 2002. Cf. Alessandro Nova, "Valori e limiti del metodo analogico nell'opera di Leonardo da Vinci," in *Leonardo da Vinci: Metodi e tecniche per la conoscenza*, Pietro C. Marani and Rodolfo Maffei, eds. (Busto Arsizio, VA: Nomos Edizioni, 2016): 25-36, 25; Nova and Frosini, *Leonardo da Vinci on Nature*, 15-16.

¹⁸ The international conference *Leonardo on Nature* organized by Alessandro Nova and Fabio Frosini was held at the Kunsthistorisches Institut in Florenz – Max-Planck-Institut, 1-3 March 2013. In 2015, the Kunsthistorisches Institut continued the dialogue across separate areas of specialization in Leonardo studies with the conference *Leonardo e gli altri – Leonardo in Dialogue* (17-19 September, 2015). Cf. Frosini and Nova, eds., *Leonardo da Vinci on Nature*, 11-31; Barkan, *Mute Poetry, Speaking Pictures*, 2-23.

¹⁹ Marco Ruffini treats Vasari's *Lives* as a representation of the time in which it was written and not as the result of the past it describes and its future interpretation. Therefore, Ruffini focuses his attention on the *Lives*' generally disregarded second edition (1568), and proposes an interpretation of the universally acclaimed 1550 edition—and of art history itself—"as pertaining to a larger cultural history that engages art history as well as literary and historical events and concerns, and therefore studies." Ruffini, *Art Without an Author*, 7. As Leonid M. Batkin clearly stated, the establishment of a unifying research in early modern studies needs a change of mentality: "La difficoltà, comunque, sta nel fatto che la teoria del Rinascimento è racchiusa in un concetto di partenza (il 'rinascimento' appunto). Ho già rilevato come le definizioni di personalità (e cultura) rinascimentale si escludano a vicenda. Ciascuna di esse separatamente non rappresenta per intero il Rinascimento. Ma il Rinascimento non è nemmeno la loro contrapposizione. Di fatto, ogni definizione vale l'altra, è l'altra (per esempio, l'individualismo rinascimentale è il sopraindividualismo, il caso è la norma, e così via). Ma le contrapposizioni dovrebbero essere ridotte a unità, dovrebbe essere operata la 'soppressione' dialettica e la loro trasformazione in un *tertium* [...]. In breve, il concetto di 'Rinascimento' si concentra in tutto il complesso logico e insieme in ciascuna delle sue definizioni." Batkin, *Leonardo*, x. A similarly holistic approach is found in Stephen Halliwell's discussion of *mimesis*: "Part of the importance of *mimesis* for the history of aesthetics lies not in any narrow or fixed conception of art, readily encapsulated in a slogan such as 'the imitation of nature,' but rather in the range and depth of issues (cognitive, psychological, ethical and cultural) that mimetic theories, through a long process of adaptation and

transformation, have opened up for analysis and reflection.” Stephen Halliwell, *The Aesthetics of Mimesis: Ancient Texts and Modern Problems* (Princeton-Oxford: Princeton University Press, 2002), 13. My examination of Leonardo’s sources and of his ordinary sketches and annotations operates within this theoretical framework. It considers Leonardo’s written and visual notations as in dialogue with each other on the space of the page, and within the historical, psychological and cultural context of their production.

²⁰ In his book *Michelangelo: A Life on Paper*, Leonard Barkan analyzes Michelangelo’s manuscripts taking each sheet as an organic unity and regarding everything on it as equally relevant. Barkan is the first scholar to examine the interplay of words and images in these sheets and not to approach them piecemeal, focusing on some elements (usually the figure sketches) to the exclusion of the others (such as fragments of verses, wording for a contract, and shopping lists). In my analysis of Leonardo’s manuscripts, I employ the same approach, which blends art history, biography and detective work, and enriches it with collaborative research in the field of philosophy, history of science and engineering.

²¹ “e-Leo: Archivio digitale di storia della tecnica e della scienza,” Biblioteca Leonardiana, accessed February 17, 2018, <http://www.leonardodigitale.com/>.

1. LEONARDO'S LIBRARY: HIEROGLYPHS AND BOOK ENTRIES

Delle casse che riservano molti tesori.

Troverassi dentro a de' noci e de li alberi e altre piante tesori grandissimi, i quali stanno li occulti.

Leonardo Da Vinci

Collezione di cose, dunque, e poi collezione delle forme delle cose (i disegni), e dei concetti delle cose (le idee).

Ma c'è un'altra collezione che Leonardo comincia all'epoca del suo trasferimento a Milano, la collezione dei segni linguistici che usiamo, convenzionalmente e arbitrariamente, per designare le cose: le parole.

Carlo Vecce

In the Codex Madrid II, on fol. 2v, among the bulk of one hundred and sixteen volumes in his possession, Leonardo mentions a curious booklet, which he labels “libro di mia vocaboli” (‘book of my words’). This is one of the few notes in his inventories referring to an actual book written by Leonardo. Apparently, we have no real trace of the finished product.¹ We do have, however, a series of folios contained in the Codex Trivulzianus that scholars have repeatedly ascribed to “libro di mia vocaboli.”² These folios feature countless lists of words that were recorded in

¹ On the same folio, Leonardo mentions three other books he might have written. The first one is “Un libro di cavalli schizzati pel cartone,” which Augusto Marinoni identified in the cartoon for the *Battle of Anghiari*. According to Ladislao Reti, the second one (“Dell’armadura del cavallo”) is the booklet of seventeen folios devoted to the bronze casting of the Sforza equestrian monument that was attached to Codex Madrid II. Then, we have “Un libro d’ingegni colla morte di fori” and “Libro dove si taglia le corde da navi.” Parronchi (“La Biblioteca di Leonardo,” in *La Nazione*, 1967) tentatively attributed the former to Madrid I, but there is not enough evidence to support his argument. Cf. Augusto Marinoni, *Appendice*, in Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 256-7.

² Vecce argues that the “libro di mia vocaboli” is a lexical repertoire which Leonardo created as a result of his writing exercises, starting with the Codex Trivulzianus. Cf. Carlo Vecce, “Due casse di libri,” in *Leonardo*

different formats. By observing how these words were organized and distributed on the space of the page, scholars over the centuries—such as Gilberto Govi, Luigi Morandi, and Luca Beltrami—once theorized that Leonardo might have created the first Italian dictionary.³ In 1911, Edmondo Solmi firmly opposed this statement; moreover, he demonstrated that Leonardo compiled his list of words by scrutinizing books, and not by analyzing the spoken language. With the important publication of *Appunti Grammaticali*, Augusto Marinoni reinforced Solmi's observations and strongly opposed the hypothesis of a dictionary. According to Marinoni, Leonardo was simply collecting words for himself. Gerolamo Calvi further demonstrated that Leonardo developed this attitude at a late stage in his career and, more exactly, when he started to think about publishing his own books.⁴

da Vinci (Rome: Salerno, 1998), 233. For the Codex Trivulzianus, see *Il Codice di Leonardo da Vinci nella Biblioteca del Principe Trivulzio a Milano*, Luca Beltrami ed. (Milan: Hoepli, 1891); Leonardo da Vinci, *Il Codice Trivulziano*, Nando de Toni, ed. (Milan: Castello Sforzesco, 1939); Augusto Marinoni, *Gli appunti grammaticali e lessicali di Leonardo da Vinci*, vol. 1 (Milan: Castello Sforzesco, 1944), and vol. 2 (Milan: Castello Sforzesco, 1952); Leonardo da Vinci, *Codice Trivulziano. Il codice n° 2162 della Biblioteca Trivulziana di Milano*, Augusto Marinoni, ed. (Milan: Arcadia-Electa, 1980); Carlo Vecce, "Collezioni di parole: il Codice Trivulziano di Leonardo da Vinci," in *Orient-Occident Croisements lexicaux et culturels. Actes des Journées Italiennes des Dictionnaires, sous la direction de Giovanni Dotoli, Carolina Diglio et Giovannella Fusco Girard* (Naples 26-28 février 2009). *Biblioteca della ricerca, Linguistica* 40 (Fasano: Schena, 2009), 143-53. For the English translation of the codex, see Raymond S. Stites, *The Sublimations of Leonardo da Vinci, with a Translation of the Codex Trivulzianus* (Washington: Smithsonian Institution Press, 1970).

³ Four pages of the codex (fols. 26-23) show 710 Italian headwords in alphabetical order, followed by a brief interpretation. In the codices Atlanticus, H, and I, we also have tables summarizing Latin declinations and conjugations, which had been considered at the basis of an Italian grammar and Latin-Italian dictionary. See Vecce, "Collezioni di parole," 145.

⁴ Cf. Marinoni, *Gli appunti grammaticali*, 10; Gerolamo Calvi, *I manoscritti di Leonardo da Vinci dal punto di vista cronologico, storico e biografico* (Bologna: Zanichelli, 1925), 142.

Leonardo's manuscripts repeatedly recount his struggle to complete a wide variety of books. Evidence of this can be found in his *Libro di Pittura*, which was actually published not by Leonardo, but by his favorite pupil, Francesco Melzi. The index opening his *Divisions of the Book on Water*, contained in Codex Leicester, on fol. 15v (Figure 1-1) also suggests his intention to publish his writings:

| Divisione del libro | Divisions of the Book |
|------------------------------------------------|----------------------------------------------------|
| Libro p° delle acque in se. | Book 1 on water in itself. |
| libro 2° del mare. | Book 2 on the sea. |
| libro 3° delle uene. | Book 3 on underground streams. |
| <l>ibro 4° de' fiumi. | Book 4 on rivers. |
| libro 5° delle nature de' fossi. | Book 5 on the nature of ditches. |
| libro 6 delli obietti. | Book 6 on objects. |
| libro 7 delle ghiaje. | Book 7 on gravels. |
| <l>ibro 8° della superfitie dell'acqua. | Book 8 on the surface of water. |
| libro 9 delle cose che in quella son messe. | Book 9 on the things placed therein. |
| libro 10° de' ripari de' fiumi. | Book 10 on riverbanks. |
| <l>ibro 11° delli condotti. | Book 11 on conduits. |
| libro 12 de' canali. | Book 12 on canals. |
| <l>ibro 13 <d>elli strumenti volti dall'acqua. | Book 13 on machines turned by water. |
| <l>ibro 14 del far montare l'acque. | Book 14 on raising water. |
| <l>ibro 15 dell<e> cose consummate dall'acque. | Book 15 on things worn away by water. ⁵ |

Even though Leonardo did not leave us an actual book on water, these chapter titles are laid out so clearly that we can assume the project had been well under way.⁶ I use folio 15v to make a couple of observations which serve to introduce my analysis. What is striking about this folio is a

⁵ Leonardo da Vinci, Cod. Leic., fol. 15v. All translations are mine, occasionally revised in collaboration with David Marsh; see also Jean Paul Richter, *The Notebooks of Leonardo da Vinci* (New York: Dover, 1970), 18.

⁶ This is not the only case testifying Leonardo's attempt to layout a book concerning water. Another preeminent example is on Codex Atlanticus, fol. 201r, where Leonardo uses eight columns to enlist a series of topics to develop in a treatise on water, which would have probably been contained in Codex Leicester. On Leonardo's project for a treatise on water, and on the meaning of the labels 29 M and such, which are found in the related folios, see Calvi, *I manoscritti*, 223, Cat. 1.

series of geometrical shapes organized in a column next to the list of chapters. These images are precisely fifteen in number, as are the chapter titles, and in fact appear to be diagrammatic representations of the chapters themselves. For instance, the first image is the diagram of a trapezoidal pyramid within a spiral. As emblem of violent curls of water, it perfectly illustrates the title of book 1: ‘on water in itself.’ The three trapezoidal pyramids in the second image form the ‘sea,’ the protagonist of book 2. Finally, the shield and prism shapes at the bottom could represent, respectively, the ‘raising water,’ and ‘things worn away by water,’ from books 14 and 15 (Figure 1-2). This intriguing folio introduces us to a crucial matter in Leonardo studies: the intentional juxtaposition of images and texts in his manuscripts.

My work examines the aesthetic forms that Leonardo used to combine pictures and writing—those synthetic visual scripts which are called hieroglyphs.⁷ As Leonard Barkan illustrates in the *incipit* of his *Michelangelo: A Life on Paper*, the multi-talented genius of Leonardo marks the essential point of departure for any work investigating word-and-image issues:

⁷ According to Schirg, the interest in hieroglyphs spread in the Renaissance following the reception of Horapollo’s *Hieroglyphica*. Cf. Bernard Schirg, “Decoding da Vinci’s *Impresa*: Leonardo’s Gift to Cardinal Ippolito d’Este and Mario Equicola’s *De Opportunitate* (1507),” *Journal of the Warburg and Courtauld Institutes* 78 (2015): 135-155, 136. See also Karl Giehlow, *The Humanist Interpretation of Hieroglyphs in the Allegorical Studies of the Renaissance: with a Focus on the Triumphal Arch of Maximilian I*, transl. Robin Raybould (Leiden: Brill, 2015); Ludwig Volkmann, *Bilderschriften der Renaissance. Hieroglyphik und Emblematik in ihren Beziehungen und Fortwirkungen* (Leipzig: Hiersemann, 1923); Kristen Lippincott, “The Genesis and Significance of the Fifteenth-Century Italian *Impresa*,” in *Chivalry in the Renaissance*, Sydney Anglo, ed. (Woodbridge, Rochester: Boydell Press, 1990), 63-65.

The vast majority of the pages on which Leonardo sets down both pictures and words—the documents that have made him famous for this kind of production—leaves the impression of being anything but doodles. It would take a far bigger book than this one (and this book has yet to be definitively written) to do justice to the range of compositional forms among these thousands of sheets, and to the sorts of logic that underlie them.⁸

According to Barkan, scholarship in this field remains a *desideratum*. Through a study of the lists of words and images as they are found in his manuscripts, I set the basis for the discussion of Leonardo's hieroglyphs as textual and visual forms which are condensed and meaningful. By surveying Leonardo's lists of words and images, and verifying their occurrences in more complex narratives, this chapter reveals Leonardo's creation of a particular and identifiable language composed of figurative, literary, and scientific terms. Drawing on databases and multi-archival research conducted in British, French, Italian, and American archives, it also explores the books contained in Leonardo's personal library, and identifies the main sources for the development of his written and visual language in fifteenth-century editions (both in Latin and Italian) of Pliny and Aesop.

The chapter is organized in two sections. In the first section, *Leonardo's Lists of Words and Images (1.1)*, I catalogue Leonardo's lists of words and images according to the semantic field to which they pertain. Then, I analyze occurrences of these textual and visual terms in Leonardo's literary writings and particularly in his fables. As preliminary research, I conducted an examination of manuscripts using the electronic databases of E-Leo, the noted digital archive

⁸ Barkan, *Michelangelo: A Life on Paper*, 13.

of Leonardo's facsimile editions, from which I selected, grouped, and classified the drawings and writings most relevant to my study. Through a comparative analysis of this material, I was able to locate two sets of folios that Leonardo conceivably compiled in order to create his textual and visual vocabulary. These folios are the already mentioned "libro di mia vocaboli"—interpreted as the lists of words contained in Codex Trivulzianus, Manuscript I, and Codex Madrid II—and a collection of images in the form of pictograms preserved at the Royal Collection of Windsor in Berkshire (United Kingdom) that Carlo Vecce identified as a possible "libro di mia figure."⁹ My examination shows that many of the words and images that we find in Leonardo's lists recur frequently in his fables, thus demonstrating his development of a textual and visual language in more complex narratives.

In the second section, *Scientific Didactic and Fable Books (1.2)* I focus on Leonardo's lists of the books he owned, and identify editions of Aesop's and Pliny's works that furnish the archetypes for the creation of his textual and visual language. I decided to limit my search to a sample of editions of Aesop's *Fables*¹⁰ and Pliny's *Natural History*,¹¹ which have an especially

⁹ "Contemporaneamente alle riflessioni teoriche consegnate agli scritti del *Paragone*, Leonardo si divertì a svolgere alcune esercitazioni sulla resa iconica della parola [...]. Il risultato è un vero lessico di parole-immagini, quel che potremmo definire 'libro di mia figure,' in analogia con il titolo reale di un perduto quaderno lessicale vinciano, il 'libro di mia vocaboli,' che a sua volta avrebbe potuto fondarsi sugli esercizi compilatori del tipo del Codice Trivulziano." Vecce, "Parola e immagine," 23, 25.

¹⁰ On Aesop's reception in the Renaissance see the exhaustive scholarship by David Marsh: "Alberti, Scala and Ficino: Aesop in Quattrocento Florence," *Albertiana* 3 (2000): 105-18; "Aesop and the Humanistic apologue," in *Renaissance Studies* 17.1 (2003): 9-26; *Renaissance Fables: Aesopic Prose by Leon Battista Alberti, Bartolomeo Scala, Leonardo da Vinci, Bernardino Baldi* (Tempe, Arizona: Arizona Center for Medieval and Renaissance Studies, 2004).

¹¹ On Pliny's *Natural History*, see the monumental work by Sara Blake McHam, *Pliny and the Artistic*

deep resonance both for Leonardo's research and for my analysis. My choice was dictated by historical, contextual, practical, and formal considerations. First, these volumes were so popular in the Early Renaissance Milanese and Florentine courts that Leonardo was certainly well acquainted with them. Second, Pliny's *Naturalis Historia* and Aesop's *Fables* are classical texts that show a formulaic structure, and combine natural and scientific observations with literary aims and allegorical interpretations. Third, both volumes circulated in illustrated editions that could have inspired Leonardo's research in linking visual and textual narratives. Finally, Leonardo quotes Aesop and Pliny several times in the corpus of his manuscripts—he even claims to possess three different editions of the Aesopian fables in his personal library.¹² Leonardo's narrative is broadly in the same spirit as that of Aesop and Pliny and their formulaic and poetic styles. What Leonardo adds, however, through his observation of natural phenomena and mechanical laws, is a re-orientation of the model towards the investigation of nature. Ultimately, by combining classic fables with scientific-didactic traditions, Leonardo draws emblematic interpretations of animals and natural elements, which represent the final stage in the development of his written and visual narratives.

Culture of the Italian Renaissance: The Legacy of the 'Natural History' (New Haven: Yale University Press, 2013), and relative bibliography. Cf. also Giuseppe Favaro, "Plinio e Leonardo," in *Per il quarto centenario della morte di Leonardo da Vinci* (Bergamo: Istituto Italiano delle Arti Grafiche 1919), 133-38.

¹² The entry "Isopo" is mentioned in Leonardo's lists of books that he owned contained in the Atlanticus (fol. 559r, c. 1490) and Madrid II codices (2v-3r, c. 1503). Leonardo's inventories record incunables A35 ("Isopo"—Esopo, *Favole*, a vernacular translation by Fazio Caffarelli, Cosenza, 1478), B20 ("Isopo in lingua franciosa"—*Les fables de Esope*, Lyon, 1484), and B37 ("Isopo in versi"—*Aesopus moralizatus*, in Latin and Italian verses, vernacular translation by Accio Zucco, Verona, 1479). Cf. Giuditta Cirnigliaro, "Le favole di Leonardo da Vinci. Struttura e temi," *Rivista di Letteratura Italiana* 31.2 (2013): 23-44, 27.

1.1. Leonardo's Lists of Words and Images

1.1.1. Libro di mia vocaboli

As Vecce has recently documented, Leonardo's main corpus of "libro di mia vocaboli" ('book of my words') is certainly the fifty-five folios of the Codex Trivulzianus.¹³ The Codex Trivulzianus is a booklet written around 1487-90 that measures 19.5 x 13.5 cm.¹⁴ It is composed of four sections assembled together that, for the most part, display Leonardo's study of religious architecture, military and engineering projects, and various other drawings. Between one note and another, we find around 8,000 words set up in columns with no apparent order, and various literary quotations. This curious material attests to Leonardo's attempt to improve his literary education, and exercise his writing skills.¹⁵

¹³ Particularly, I refer to folios 10v, 11v-13 (from booklet 1), 14 (from booklet 2), 15-17r, 18, 45, 46v, 49-53r, 54v-55 (from booklet 3). Reti stated that the Codex Trivulzianus itself is Leonardo's "libro di mia vocaboli." Marinoni opposed Reti's argument by pointing out that the manuscript does not contain only lists of words, but also other major studies. In addition, Leonardo continued to collect words for many years after he wrote the Trivulzianus. According to Marinoni, the "libro di mia vocaboli" was a booklet where Leonardo alphabetically reordered the words that he collected in the various manuscripts, freed from repetitions and orthographic errors. The volume was so dear to him that he mentioned it in one of the lists of the books he owned. Cf. Vecce, "Parola e immagine," 22; Vecce, "Collezioni di parole," 145; Augusto Marinoni, *I rebus di Leonardo da Vinci raccolti e interpretati: con un saggio su una virtù spirituale* (Florence: Olschki, 1954), 129-30; Augusto Marinoni, "Leonardo: libro di mia vocaboli," in *Studi in onore di Alberto Chiari*, vol. 2 (Brescia: Paideia, 1973): 751-53; Augusto Marinoni, *Appendice*, in *Leonardo da Vinci, Scritti letterari*, Marinoni, ed., 256.

¹⁴ André Chastel reduces the timeline to 1488-90. See André Chastel, *Nota*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XXIX.

¹⁵ At the center, we see an enormous S, corresponding to the Ambrosiana Library's signature and, right above that, a little '10' refers to Pompeo Leoni's cataloguing of Leonardo's codices at the end of the fourteenth century. Finally, on the right upper corner, the number one is repeated in black and red ink as part of, respectively, the fourteenth century numbering, and the most recent numbering of the folios. See Augusto Marinoni, *Introduzione*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., VII-IX.

Before undertaking an analysis of Leonardo's lists of words, I would like to consider the Codex Trivulzianus in its entirety, noting some pages that shed light on my interpretation of the actual word lists. On the reverse of the first folio, we find a particularly striking word-and-image mixture that directly refers to Leonardo's personal library (Figure 1-3).¹⁶ Specifically, at the upper margin of folio 1v Leonardo records a classical citation from Roberto Valturio's *De re militari*:

Anniano Marcellino afferma essere abrusiati 7 cento mila volumi di libri ne la pugna alessandrina al tempo di Julio Cesare.¹⁷

Curiously, the sentence reenacts Valturio himself quoting Ammianus Marcellinus's record of the burning down of the 700,000 volumes held by the Library at Alexandria during the civil war between Caesar and Pompey in 47 B.C. Valturio's *De re militari*, together with Masuccio Salernitano's *Novellino*, provides a major source for Leonardo's collection of words, which is in

¹⁶ The *recto* of the first folio is completely blank, except for a few signatures by the manuscript's owners indicating the cataloging of the copy and the numbering of the pages.

¹⁷ Leonardo da Vinci, Cod. Triv., fol. 1v. "Ammianus Marcellinus notes that seven hundred thousand volumes of books were burned at the conquest of Alexandria in the time of Julius Caesar." Transl. Stites, *The Sublimations of Leonardo da Vinci*, Cat. 124. *Anniano* stands for *Ammiano*, according to the habit of the time to distort authors' names. Cf. Marinoni, *Introduzione*, in Leonardo da Vinci, *Codice Trivulziano*, XXI. According to Marsh, Ammianus presumably repeats Gellius for the 700,000 volumes (I refer to our recent email exchange on this topic in December of 2016). The reference to Ammianus's vanished library is of a particular interest for our research: for Leonardo's library has now also vanished. It is possible to reconstruct the history of these libraries only through intertextual research on citations, which testify the strong relationship that authors had with their literary sources. Leonardo's reenactment of the vanished library topic, drawn from Ammianus and possibly derived from Gellius, intensifies our interpretation of his peculiar attachment to books. See Luciano Canfora, *La biblioteca scomparsa* (Palermo: Sellerio, 1986), transl. Martin Ryle, *The Vanished Library* (Berkeley-Los Angeles: University of California Press, 1989). On the reconstruction of Leonardo's vanished library, see Carlo Vecce, *La biblioteca perduta: I libri di Leonardo* (Rome: Salerno, 2017).

turn modeled on Luigi Pulci's *Vocabulista*.¹⁸ But here Valturio is not cited only for compiling a lexicon, but also for making a statement about literature. This emerges more clearly when we examine the Valturio citation in relation to other annotations found here and elsewhere in the Codex Trivulzianus.¹⁹

¹⁸ Cf. Vecce, "Collezioni di parole," 145; Carlo Vecce and Giuditta Cirnigliaro, *Leonardo: favole e facezie. Disegni di Leonardo dal Codice Atlantico. Codex Atlanticus 16* (Novara: De Agostini, 2013), 9.

¹⁹ Edmondo Solmi identified Valturio as a major source for Leonardo's manuscripts in his *Studi sulla filosofia naturale di Leonardo da Vinci: gnoseologia e cosmologia* (Modena: G.T. Vincenzi, 1898). In 1908, Solmi verifies all the occurrences between Leonardo's manuscripts and Valturio's *De re militari* and links Leonardo's passage to the following one from Valturio: "Ut Ammiano Marcellino placet septingenta voluminum milia..., bello priore alexandrino, ... dictator Cesare, ... conflagrasse produntur." Roberto Valturio, *De rei militari* (Paris: Welchel, 1534), 12. Leonardo mentions Ammianus Marcellinus in Manuscript B, on fol. 45v. Here, Leonardo quotes Ammianus to describe the *malleoli*, a sort of arrow made of cane. Then he continues by saying that inside of these arrows there used to be an incendiary compound made of laurel's oil. The notation contained in Manuscript B is relevant because it addresses both the fire, which is the subject of the quotation under examination from Codex Arundel, and the laurel, which is the subject of the anti-Petrarchan triplet that follows this quotation, on the same folio. In his account of Leonardo's sources, Solmi starts mentioning Ammianus Marcellinus's passage (without specifying Valturio's page that is the source of Leonardo's folio). Then, he illustrates the correspondences between Valturio and Leonardo's Manuscript B (fols. 5v and 6r are inspired by Valturio's page 223, fol. 7r by page 226, and fol. 7v by page 227). After that, Solmi goes back to the Codex Trivulzianus and shows that fol. 41r is drawn upon Valturio's pages 12 and 1. Fol. 14r also refers to page 1, and fol. 2v to page 12. From this brief account we deduce that Leonardo is organizing Valturio's material according to a somehow systematic method. In fact, he does not start from the beginning of Valturio's book, but combines quotations found on different pages which relate to each other. Other relevant notes from Valturio are found on fol. 14r: "Nulla può essere scritto per nuovo ricercare e quale cosa di te a me stesso prometta," and 14v: "Demetrio solea dire non essere differenza dalle parole e voce dell'imperiti ignoranti che sia da' soni e strepiti causati dal ventre ripieno di superfluo vento. E questo non senza cagion dicea, imperò che lui non reputava esser differenza da qual parte costoro mandassino fuori la voce o dalle parti inferiori o dalla bocca; che l'una e l'altra era di pari valimento e sustanzia." These two sentences are indeed of great interest in respect to Leonardo's attempt to be a writer. They could refer to Leonardo's discouragement in the face of writing something new to his time, and his concerns on contemporary writers about redundancy, and use of wind-like words. Cf. Edmondo Solmi, *Scritti vinciani. Le fonti dei manoscritti di Leonardo da Vinci e altri studi* (Florence: La Nuova Italia, 1976), 277; Vecce and Cirnigliaro, *Leonardo: favole e facezie*, 9.

Right below the citation, Leonardo sketches some caricatures described by the manuscript's donor Galeazzo Arconati as "disegni di varie teste buffonesche," which are the prelude to the famous heads on Windsor RL 12,495.²⁰ Their freshness and immediacy of sign indicate that the caricatures were sketched from life. The following annotation is a playful anti-Petrarchan triplet that continues the vein of sarcasm introduced by the caricatures. It recites, in fact, that Petrarch was so in love with the laurel because it tasted good with sausage and thrushes:

Se 'l Petrarca amò sì forte il lauro
fu perché gli è bon fra la salsiccia e 'l tor<do>
I' non posso di lor giance far tesauo.²¹

Clearly, the word *lauro* ('laurel') refers sarcastically to Petrarch's beloved Laura to create an analogy between good recipes and sexual intercourse. In this way, Leonardo derides the sublimation of love in Petrarch's lyric poetry. We infer that Petrarch is a charlatan: therefore, Leonardo cannot consider the lyric poet's chatter as a reliable literary model. Note that Leonardo

²⁰ Cf. Chastel, *Nota*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XXIX.

²¹ Leonardo da Vinci, Cod. Triv., fol. 1v. "If Petrarch held so dear the laurel / it was perhaps because it is so good between the sausage and the thrush." Transl. Stites, *The Sublimations of Leonardo da Vinci*, Cat. 124. Leonardo was certainly well acquainted with Petrarch's works, as the name "Petrarca" appears in one of his catalogue of the books that he owned (Cod. Atl., fol. 210r, c. 1497). Besides, Augusto Marinoni suggests that the triplet should consist of verses of an unknown poet that Leonardo recalls from memory. In fact, the three hendecasyllables of which the triplet is composed are flawed. The first hendecasyllable should contain a *dialefe*—which is a short metrical pause between two identical vowel sounds—in *Petrarca / amò*, the second one would need the substitution of *perché* with *che*, and the third one would require the substitution of *posso* with *vo*. See Marinoni, *Introduzione*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XXI. The noun *tordo* could refer either to Pulci or Burchiello ("Duo salsicciuoli accompagnano un tordo") as suggested by Marsh. Anna Maria Brizio, in *Scritti scelti di Leonardo da Vinci* (Turin: UTET, 1996), mentions Bellincioni as a possible source of the passage: "Se 'l targon è tra la salsiccia e il tordo."

uses the compound *lor giance* ('their chatters'), in which the pronoun 'their' refers not only to Petrarch, but also to all the other *litterati* ('men of letters').

What is, then, the relationship between the anti-Petrarchan triplet, the caricatures, and Valturius's quotation from Ammianus Marcellinus? We should read the fragments as a single entity, together with the final lines on fol. 1v, in order to understand their intimate link:

Dua principi essi difiniscano cioè a<p...> / salvatico è quel che si salva.²²

Even though the inscriptions on this folio accumulated over time, the first line of this note—usually overlooked by scholars in favor of the second one—possibly refers to the previous quotations. After two notations about the physical destruction of literary volumes due to a fire, and the depreciation of their cultured content due to the mockery of Petrarch, Leonardo properly states that only the 'uncultivated' is preserved over time. According to Vecce, the play on words is built on the false etymology of *salvatico*, and betrays Leonardo's lack of humanistic education, for which he would have appeared as an illiterate to Florentine intellectual society.²³

²² Leonardo da Vinci, Cod. Triv., fol. 1v. "Two principles should be defined as follows / Saved (or healthy is he who saves himself." Transl. Stites, *The Sublimations of Leonardo da Vinci*, Cat. 124. The interpretation of the last word of the first line is still uncertain. I quote the renowned Marinoni's transcription *ap...* and offer a possible interpretation of the word. Following Marinoni, *ap...* can stand for *appar* and illustrate that Petrarch's memory survives in popular untamed appropriation. When I discussed with Marsh this passage, he offered an exciting alternative, which takes into account Leonardo's interest in word-and-image definitions and considers the two phrases as consequential: "They define two principles: one that saves and one that is saved." In this case, the contrast may be between *salvatico* (i.e. *salvifico*) and *salvato*.

²³ Cf. Vecce and Cirnigliaro, *Leonardo: favole e facezie*, 9.

As a result, the drawn caricatures change into the literary ones, which are used to critique classic humanistic authorities.²⁴

The *incipit* of the Codex Trivulzianus is, in itself, a visual and textual summary of Leonardo's pursuit of a language of words and images. In addition, this language results from the incessant comparison between his own experience and traditional archetypes. The first list appears on the next page, and it refers exactly to these archetypes:

Donato / lapidario / plinio / abaco / morgante.²⁵

This is neither a list of words nor a list of images: it illustrates few of Leonardo's own books.²⁶ In fact, these titles are also found in the more accurate catalogues of his personal library contained in the Codex Atlanticus (fol. 210r, c. 1497) and in Madrid II (fols. 2v and 3r, 1503-4). Therefore, they can be interpreted as the very *incipit* of Leonardo's library collection.²⁷ The list is

²⁴ Curiously, Ammianus Marcellinus's note is followed by arithmetic calculations, which are also found on the lower part of the folio in correspondence with Petrarch's triplet. Here, numbers submit to the rule of three—for instance, $2 \times 12 = 24$ —, but probably have no connection with the literary notes and drawings on the rest of the folio. In fact, they are antecedent to the other writings: written from left to right, with different ink.

²⁵ Leonardo da Vinci, Cod. Triv., fol. 2r.

²⁶ A very interesting list concerning Leonardo's books is found on fol. 331r from the Codex Atlanticus. Here, Leonardo notes in one column the names of few books belonging to people he knew—"Libro del Pandolfino," "Libro di Maestro Pagolo Infermieri," "Gramatica di Lorenzo De' Medici," "Libro di Maso"—and books he probably found at the market ("Libri di mercato"), together with some artistic tools and various objects, such as "Coltegli," "Penna da rigare," "Stivaletti, scarpe e calze." Finally, we see enlisted some Florentine libraries ("Libreria di Sancto Marco," "Libreria di Sancto Spirito"), names of people ("Lattanzio Tedaldi," "Antonio Covoni"), and to-do items ("Tignere la vesta"). Books are also the protagonists of one of Leonardo's prophecies: "De' libri che 'nsegnan precetti. I corpi senz'anima ci daranno con lor sentenzie precetti utili al morire." (Leonardo da Vinci, Cod. Atl., fol. 1033r).

²⁷ Morgante only features in the Madrid II catalogue; the other books in both the Madrid II and the Atlanticus. Cf. Chastel, *Nota*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XXIX.

accompanied by a drawing of a machine located on top of a raft composed of various boats, and a few various schematic military drawings. In this case, classical humanities are juxtaposed with engineering projects.

Literary texts not only represented a source of words for Leonardo's collections; they also provided him with the very idea of accumulating words. At the center of the list, we read "plinio," a reference to the *Naturalis Historia* that Leonardo possessed in the vernacular translation by Cristoforo Landino.²⁸ Interestingly, Landino himself, while reading Petrarch's sonnets in the Florentine Studio, argued that in order to be a good 'Tuscan' it was necessary to be 'Latin,' and "ogni dì de' latini vocaboli derivare et condurre nel nostro idioma."²⁹ Leonardo echoes the same concept on folio 6v from the corpus of the anatomical drawings:

Questa dimostrazione è tanto necessaria a' buoni disegnatori quanto ali buoni grammatici la dirivazione de' vocavoli latini, perché male farà li muscoli delle figure nelli movimenti e azioni di tal figure chi non sa quali sieno li muscoli che son causa delli lor movimenti.³⁰

²⁸ The name "plinio" appears on both Madrid II and Atlanticus catalogues of books. The entire title of the volume is *Historia Naturale tradocta di lingua latina in fiorentino per C. Landino* (Venice, 1476, 1481, 1489). Leonardo certainly uses it for his bestiary, and—as I argue here—for his fables. Cf. Marinoni, *Appendice*, in Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 248. See also Vecce, *Appendice*, in Leonardo da Vinci, *Scritti*, Vecce, ed., 255; Romain Descendre, "La biblioteca di Leonardo," in *Atlante della letteratura italiana, Dalle origini al Rinascimento*, vol. 1, Sergio Luzzatto, and Gabriele Pedullà, eds. (Turin: Einaudi, 2010): 356-63, 592-95.

²⁹ 'Everyday we learn Latin words in order to assimilate them in our idiom,' my translation. Cf. Marinoni, *Introduzione*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XIII; Marinoni, *Gli appunti grammaticali*, 127.

³⁰ Leonardo da Vinci, *Corpus of Anatomical Drawings*, fol. 6v. "e-Leo: Archivio digitale di storia della tecnica e della scienza," Biblioteca Leonardiana, accessed February 17, 2018, <http://www.leonardodigitale.com/>.

With these words, Leonardo constructs a similitude between the artist and the grammarian, who need to know the structural elements of what they are depicting, and prepare themselves for the study of basic words and images.³¹ In this respect, we can deduce few interesting details from the other names on the list. “Donato” is the *Donatus latine et italice*, a collection of works by the fourth-century Roman grammarian Aelius Donatus, published in Venice in 1499, which was popular at the time both in its Latin and Italian version. Latin grammars of this kind populate the Codex Madrid II list of books, testifying that Leonardo’s interest for literature certainly increased over time.³² “Lapidario” and “abaco” refer to two unidentified books concerning the fields of natural philosophy and mathematics.³³ Finally, “morgante” is Luigi Pulci’s homonymous work, reminding us of Leonardo’s passion for literature.

³¹ In 1894, Henrich Adolf von Geymüller hypothesized that Leonardo used his lists of words to investigate the mechanism with which ideas become sounds. According to him, Leonardo undertook this project with the aim to dive into the philosophy of language. The critic based his idea on the observation of some juxtapositions of words, such as *eserciti - esercizi*, and *notare - nuotare*. However, Marinoni disregarded his study for two reasons: first, the lack of proofs in this direction; second, the disproportion between Geymüller’s few juxtapositions and the thousands of remaining words in the codex. See Marinoni, *Introduzione*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XVII.

³² Latin grammars from the Madrid II catalogue of books are: “Regole di Perotto” (which is the *Rudimenta grammatices* by Perotti), and “Donato grammatico” and “Donadello” (corresponding to Donato’s *Ars Maior* and *Donatus sive de octo partibus orationis*). “Donato vulgare e latino” is the already mentioned *Donatus latine et italice*, which features also on Cod. Triv., fol. 2r. Other grammars mentioned here are: “Plisciano” (*De partibus orationis*); “Regole gramatice in asse” (a grammar possibly curated by Guarino Veronese or Gaspare Massari); “Regole latine di francesco da urbino” (arguably, a book from the Duke Library of Urbino). In the same group, we gather few treatises on rhetoric, such as the “Rettorica Nova,” and two vocabularies—“vocabulista piccolo” (Giovanni Bernardo Savonese’s *Vocabolista ecclesiastico*) and “vocabolista in cartapecora” (perhaps Giovanni Balbi’s *Catholicon*). Cf. Marinoni, *Appendice*, in Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 244.

³³ As a possible “lapidario,” Marinoni indicates Alberto Magnus’ *Mineralium libri V* (Pavia 1491, and Venice 1495), a vernacular edition of Marbodeus’s *De lapidibus*, and a *Lapidarium* edited in Wien in 1490. With

Leonardo found his words in the works of authors who wrote in vernacular, looking for Latin terms, or Latinisms, that had already been translated into vernacular language. Lists of words from pages 26 to 23 (here the page numbering goes backward in accordance with Leonardo's lefthanded script) in the Codex Trivulzianus are mainly deduced from Pulci's *Vocabulista*—a collection of 710 Latin words in alphabetical order followed by relative explanations.³⁴ Then, Leonardo borrows words from Masuccio Salernitano's *Novellino* (fols. 9 and 8), the already discussed *De re militari* (fols. 2, 4, 57, 58, 87-84, 102-100, 94-90), and few other unidentified sources.³⁵ These are not just transcriptions: while recording the words, Leonardo is already exercising in deriving new words similar in meaning and sound to the given ones. The sequence of major interest for my study appears on fol. 51v:

Turbolentia / perturbatione / turbine / versabundo / divolvere / collocare / stabilire / elevatione / innauldito / bonbito / tonante [...] caliginosa / bufera / turbine / turpe / turpidine / turpolente / turbe / turbidine / turbolentia [...] tenpesta / fortuna / pluviosità.³⁶

regard to the note "abaco," abacus books were indeed very popular in the late fifteenth century. In his catalogues of books, Leonardo mentions six different volumes on abacus: "libro d'abbaco da Milano," "libro d'abaco mezzano," "libro d'abbaco mezzano," "libro d'abaco dipinto," "libro d'abaco, l'ha Giovan del Sodo," and "libro d'abbaco del Sassetto." Cf. Marinoni, *Appendice*, in Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 245, 249-50.

³⁴ Solmi documented the correspondences between the Codex Trivulzianus and the *Vocabulista*, along with those between Perotti's *Rudimenta Grammatices* and a list of 202 Italian verbs contained in the Codex Atlanticus, on fol. 1025. See Solmi, "Nuovi contributi alle fonti dei manoscritti di Leonardo da Vinci," *Giornale Storico della Letteratura Italiana* 58 (1911): 297-358, 318-326; Cf. Marinoni, *Introduzione*, in Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., XXIII.

³⁵ On *De re militari*, see Nando De Toni, "Ancora sul Valturio," *Notiziario Vinciano* 10 (1979): 5-68. On *Novellino*, see Giovanni Ponte, "Una fonte lessicale vinciana: il *Novellino* di Masuccio Salernitano," *Esperienze letterarie* 1 (1976): 62-72.

³⁶ Leonardo da Vinci, Cod. Triv., fol. 51v. "Turbulence / perturbation / turbine / turning about on itself (?) / to develop (?) / to place or put / to establish / elevation / unheard of / buzzing like a bee /

No one can deny that these words belong to the same semantic field, which I would define as that of *bufera* ('storm,' 'blizzard,' or, better, 'tempest'). This can be one of Leonardo's exercises on words derivation: the word *turbolentia* brings him to the idea of *turbine* ('whirl,' 'swirl'), which appears again after the combination *caliginosa bufera* ('murky tempest'). Then, the contamination of the voiceless labials *b* and *p* gets him to *turpidine* (which probably is *turpitudine*: 'turpitude'), and the original coinage *turbidine* (from 'turbidus,' 'turbulent, muddied,' hence 'confused/clouded' 'whirl-ness'). The game goes on in a sequence of multiple and repetitive stormy sounds such as *turbolentia* (turbulence), *tonante* (booming), and *pluviosità* ('raininess').³⁷

thundering [...] murky / tempest / whirlwind / foul, villainous / infamy / being foul / turbe from / turba (?)—crowd (?) / turbulence / turbulent (?) [...] tempest / fortune / raininess." Transl. Stites, *The Sublimations of Leonardo da Vinci*, Cat. 228. Again, on fol. 50v, there is a sequence of words that reminds us of the semantic field of the storm, or better, to that of the air versus the fire: ".addiacciare / rafredare / schaldare / intiepidire / congelare," curiously followed by the word *occisione*. (Modified translation in collaboration with David Marsh.) Marinoni (*Appunti grammaticali*, 67) already noted the closeness of *turbolentia*, *perturbatione*, *turbine* and *divolvere*, and hypothesized for *versabundo* the meaning of "mobile, vorticoso, impetuoso." Note that the word *turbine* appears on the manuscript, the second time, in the form of *turbone*.

³⁷ Some of these words recur, with their definition, on fol. 12r, which is the last page of Leonardo's series of alphabetically ordered words from Pulci's *Vocabulista*. These words, spaced out by some others belonging to similar semantic and phonetic spheres, are: "turbine – turpitudine: la tenpesta del mare e de l'aria / turbe – turpe: revolution di vento / torrido: ardente / torente: fiumi che secano la state / tetro: oscuro e nero / tremebondo: tremante / tenace: tegniente / turpe: brutto e tristo / turgido: gonfiato [...] voragine: inghiottire del mare / vortice: i ritrosi dell'aque." Noticeable pages are also fols. 52 and 53, where dotted words commencing in *a* are accompanied by few significant meaning-couplets (such as *fagiti-viti*; *sinderis-superiore*; *delitto-pecato*; *requie-quiete*; *tormento-pena*; *giemire-piangere*; *inordinato-scielerato*), notes about night military assaults, and a drawing of a crossbow—which was probably inspired by the analogous drawing in Valturio's *De re militari*, 151.

Furthermore, as Marinoni argued, Leonardo preferred to reduce conjugated verbs to the infinitive and, likewise, plural and feminine words to their standard singular and masculine form, testifying to his care in reorganizing the material.³⁸ Accordingly, on the same folio, we have words such as *ruinare*, *stormeggiare*, *.abbreviare*, *sententiare*, *acusare*; and *.aparamento*, *.aparechiamento*, *massimento*, *idioto*, *infinito*. However, this is not always the case, as we also have the already mentioned *caliginosa*, and then *fetida*, *turbe*, *pronostici*, *.aguri*, *splendenti*, in the singular feminine, and the plural feminine and masculine forms.

Another certain indicator of Leonardo's intention of reordering his collection is the little dot that he puts before words starting with the letter *a*—broadly documented on fols. 49, 50-52, 53r, 54v, and 55. To confirm this hypothesis, there are 37 words commencing in *abb-* and *ass-* enlisted in alphabetical order on fols. 1v and 3v from the Codex Madrid I.³⁹ Little dots feature on other folios too, before words of a different nature, which testify to other possible ways of word ordering developed by the artist. For instance, on fol. 50v of the Codex Trivulzianus we have *.finalmente* and *.etiam*. Right after that, on fol. 51v *.siché*, *.in ciascun loco*, *.la qual cosa*, *.tamen*, *.nondimeno* could be part of a section of the 'book of my words' devoted to pronouns and adverbs. Finally, on fol. 54v we find *.nondimeno*, and on fol. 55r *.la qual cosa*, *.le predette cose*, *.non solamente*, *.avegniadioché*, *.e perché di tutto*, *.cioè*, *.massimamente*, *.perrispettoché*, *.circha questa*, *.infr<a> l'altre cose*, *.cioè quando*, which likely belong to the same group.

³⁸ Cf. Marinoni, *Introduzione*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XVI.

³⁹ Ibid., XXIII; Marinoni, "Leonardo: *libro di mia vocaboli*," 751-66.

Continuing our review of the Trivulzianus, we notice the increase of quotations similar to the ones previously analyzed. Empty spaces or blank pages often follow these quotations, suggesting that Leonardo intended to develop them at some point. Apart from the theme of 'books' developed in the first folios, other insistent themes in the manuscript are, curiously, those referring to natural elements, such as 'air' and 'fire.' The lists of words come as the last project in the booklet for they often naturally fill in the blank spaces: they occupy almost entirely the fourth section, half of the third, ten pages of the second, and seven pages of the first section.⁴⁰

1.1.2. Libro di mia figure

The first evidence of Leonardo's attempt to organize words and images for the creation of his textual and visual lexicon is a set of seven folios from the Royal Collection of Windsor (RL 12,692-7 and RL 12,699) that contains curious pictographs belonging to the same time frame of the Trivulzianus (c.1487-90), when Leonardo was at the service of Ludovico il Moro in Milan. These folios show brief sequences of icons that create visual 'sentences' composed of unique semantic image-units. Leonardo's pictographs were made available to the public for the first time in Teodoro Sabachnikoff's publication of the Windsor drawings in 1901.⁴¹ Four years later, Mario Baratta devoted to the pictographs ten pages of his essay on Leonardo as a deviser of

⁴⁰ Cf. Marinoni, *Introduzione*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XIII.

⁴¹ I refer to Teodoro Sabachnikoff, *I manoscritti di Leonardo da Vinci della Reale Biblioteca di Windsor*, Giovanni Piumati, transcr., and ed. (Turin: Roux & Viarego, 1901).

riddles.⁴² In 1954—two years after he had completed his study of the word lists in the Codex Trivulzianus—Marinoni finally catalogued and interpreted the entire collection of Leonardo's pictographs.⁴³ Up until now, scholarship in this field has considered Leonardo's pictographs as amusing riddles to be employed at the Milanese court, according to early modern French and Italian aristocratic literary customs.⁴⁴

Leonardo's pictographs are distinctive visual symbols belonging to a subcategory of emblems—the Italian Renaissance *imprese*—which are called 'rebuses.' *Impresa* is, in fact, a form of hermetic language only intelligible in erudite circles. It is composed of an image or *figura* (its body, according to emblem treatises), and a caption or *motto* (its soul). In his *Dialogo dell'imprese* (1551), Paolo Giovio records the use of *imprese* on knights's surcoat, harnesses and banners, "per significare parte de' lor generosi pensieri" ('to signify their lavish thoughts').⁴⁵ In

⁴² See Mario Baratta, *Curiosità vinciane* (Turin: Fratelli Bocca, 1905), 59-108.

⁴³ See Augusto Marinoni, *I rebus di Leonardo raccolti e interpretati: con un saggio su una virtù spirituale* (Florence: Olschki, 1954).

⁴⁴ Cf. Marinoni, *I rebus di Leonardo*, 123-4; David Marsh "L'Alberti, il Pisanello e gli Este. *Devises* e medaglie umanistiche nel primo Quattrocento," in *Leon Battista Alberti. Actes du congrès international. Gli Este e l'Alberti: tempo e misura* (Ferrara, 29 novembre-3 dicembre 2004), (Pisa-Rome: Fabrizio Serra Editore, 2004), 101-10.

⁴⁵ Paolo Giovio, *Dell'imprese militari et amorose di Monsignor Giovio Vescovo di Nocera; con un ragionamento di Messer Lodovico Domenichi, nel medesimo soggetto* (Lyon: Guglielmo Roviglio, 1559), 6. Giovio clearly outlines five necessary conditions for an emblem to be valid: "Sappiate adunque M. Lodovico mio, che l'invention e o' vero impresa, s'ella debba havere del buono, bisogna ch'abbia cinque conditioni; Prima giusta proportion e d'anima e di corpo; Seconda, ch'ella non sia oscura, di sorte, ch'abbia mistero della Sibilla per interpretare a vederla intendere; ne tanto chiara, ch'ogni plebeo l'intenda; Terza, che soprattutto habbia bella vista, laqual si fa riuscire molto allegra, entrandovi stele, Soli, Lune, fuoco, acqua, arbori verdegianti, instrumenti mecanici, animali bizzarri, et uccelli fantastichi. Quarta non ricerca alcuna forma umana. Quinta richiede il motto, che è l'anima del corpo, et vuole anco essere breve, ma non tanto, che si faccia dubbioso; di sorte che di due o tre parole quadra

the Cinquecento court, rebuses usually took the form of riddles, which became very popular thanks to Lorenzo Spirito Gualtieri (*Libro delle Sorti*, 1482) and Giambattista della Porta (*De furtivus literarum notis*, 1563). Alternatively, rebuses could also appear as iconic messages featured on clothing accessories, such pins and brooches—a notable example is Fabricio Luna's *Fermagli*.⁴⁶ As documented in Scipione Ammirato's *Dell'imprese* (1562), at the time hieroglyphs like those found, for instance, in the printed *Polifilo* or in Valeriano's treatise, enjoyed a widespread popularity.⁴⁷ In the sixteenth century the rebus appears in different guises in oral, written, and visual cultures. It engenders a range of phenomena, from poetic formulations, coat-of-arms, standards, coins, and medals, to symbols that appear on arches, chimneys and gravestones. Leonardo certainly loved the versatility of rebuses, which clearly suited his continuous interdisciplinary experimentation.⁴⁸

benissimo, eccetto se fusse in forma di verso, o intero o spezzato; Et per dichiarare queste conditioni, diremo, che la sopradetta anima et corpo s'intende per il motto, o per il soggetto; et si stima che mancando o il soggetto all'anima, o l'anima al soggetto, l'impresa riesca imperfetta." Ibid., 8. For a discussion of this passage, see chapter 2, paragraph 2.3.2. *Mirrors*.

⁴⁶ Fabricio Luna's *Fermagli* is an appendix to the volume by the same author: *Vocabulario di cinquemila vocabuli toscani non men oscuri che utili e necessari del Furioso, Boccaccio, Petrarca e Dante nuovamente dichiarati e raccolti da Fabricio Luna per alfabeto ad utilità di chi legge, scrive, e favella*, 1536. Other relevant emblem catalogues, to be discussed in Chapter Two, are: Scipione Bargagli, *Le imprese*, 1594, and Cesare Ripa, *Iconologia*, 1593.

⁴⁷ Scipione refers to Francesco Colonna's *Hyphrotomachia Poliphili* (first published in Venice in 1499), and to Pierio Valeriano's *Hyeroglyphica* (Basel, 1556). Cf. Ammirato, *Il Rota, overo Dell'imprese* (Naples: G.M. Scotto, 1562), 8-14.

⁴⁸ Cf. Jean Céard and Jean-Claude Margolin, *Rebus de la Renaissance. Des images qui parlent* (Paris: Masoinneuve et LaRose, 1986), 17-20; Vecce, "Parola e immagine," 25.

As previously mentioned, *imprese* and rebuses should contain both *figura* and *motto*. Each of these, on their own side, should contribute to suggest the hidden meaning of the emblem. In Leonardo's case, we are in the face of very particular rebuses, because the hidden meaning is already revealed. He, in fact, composes his rebuses mainly of images, and generally writes captions beneath them. Their overt and simple resolution suggests that Leonardo's rebuses cannot be considered as typical of early modern intellectual games. Hence, I argue that they represent a collection of image-sequences which contribute to Leonardo's creation of his personal visual vocabulary. Remarkably, Leonardo's vocabulary items either focus on essential qualitative features of the objects depicted (for instance, the pear tree is a productive plant), or draw on specific formal aspects of them (pears have round oblong shapes) in order to express abstract concepts.⁴⁹

Leonardo's seven folios of rebuses show brief sequences of icons that create full sense phrases by juxtaposition of the meaning of each single icon. For the most numerous series (RL 12692), Leonardo used a folio where he had previously sketched astronomical drawings and an architectural plan. This is probably due to the high cost of paper in the fifteenth century and not—as a wide range of scholarship has claimed—to the irrelevance of the pictographs in Leonardo's project.⁵⁰ On RL 12692r, the pictographs are methodically traced from right to left—as it was typical of the left-handed artist. Each pictograph is framed by long horizontal lines and

⁴⁹ According to Vecce ("Parola e immagine," 19), Leonardo's writings are intrinsically bound to the image (i.e. the visual form) of the idea that arises in the artist's mind.

⁵⁰ Cf. Vecce, "Parola e immagine," 23.

short vertical segments, which separate it from the others. At the center of the folio, Leonardo had to use round frames to delimit a few of his pictograms in order to isolate them from projects antecedent to the catalogue of images (Figure 1-4). On the back of the folio, rebuses are more rarely demarcated by lines and segments, even though they are located in orderly fashion within the empty spaces of the folio, including each little room of the architectural central plan that occupies most of the folio (Figure 1-5).

The folio has all the qualities of a catalogue of images assembled for the creation of a visual lexicon, such as accuracy in recording the images, and reorganization of the drawings in the space of the page. Furthermore, in the *corpus* of Leonardo's manuscripts we find various similar rebuses that testify to his strong interest in a few subjects which he then included into the catalogue. For instance, on folio 94v from Manuscript M there is a drawing of the sun (*sol*), followed by the letter *N* in capital letters—in Italian spelled *e-n-n-e*. The transcription of the rebus, which curiously goes from left to right, reads *solenne* ('solemn') (Figure 1-6). An identical drawing of the sun is contained at center of RL 12692v, towards the right.⁵¹ It is preceded by the sketch of waves (*onde*), and followed by the syllable *que*, a steelyard (*stadera*), and the letters *eti* to signify "Onde sol quest'aderenti" ('So that only these participants') (Figure 1-7).⁵² A similar

⁵¹ This is rebus 103 in Marinoni's catalogue (*I rebus di Leonardo*, 204). Henceforth, I refer to Leonardo's rebuses by using the numbering provided in this volume.

⁵² Translations of this and of the following rebuses are mine. The sentence "onde sol quest'aderenti" could be translated in various ways, depending on the context. As I will explain later in my discussion of the word, here the Italian *onde* might either have the function of adverb of movement and origin, meaning *da dove* ('whence'), the function of causal relative pronoun *per cui* / *con cui* ('for which' / 'with which'), or that of the final conjunction *affinché* ('so that').

example can be found in Codex Forster I, on fol. 41r, where a drawing of two bridges (*ponti*) with three arches is followed by the preposition *in* and the image of a heart (*cuore*): “Ponti in cuore” (‘Keep in mind’ / ‘learn by heart’) (Figure 1-8). On the same page, the word *datti* juxtaposed to the drawing of a small board with the shape of an irregular pentagon and a cross on top carries the message “Datti pace” (‘Give yourself peace’). The drawing of the pentagon represents the liturgical object—called *pace* (‘peace’) or *osculum pacis* (‘kiss of peace’)—which the priest offers to the believers to kiss.

Finally, in Forster II, on the *recto* of fol. 63, there is a drawing of a falcon that carries in his beak a piece of clock mechanism meaning *tempo*: “Fal con tempo” (‘Do it in good time’). Then, we see an image of a cut off tree that sprouts a new branch, with the writing “Ancora spero” (‘I keep hoping’) (Figure 1-9). Actually, these two pictographs signify full sense sentences given by the assimilation of visual icons which are not to be considered as independent semantic entities. They probably belong to a more advanced stage—or a distinct category of emblems—than the pictographs from the Royal Collection of Windsor.

Leonardo scholars—in particular, Calvi, Marinoni, and Vecce—agree that the main theme of Leonardo’s rebuses is that of love.⁵³ In fact, in Leonardo’s collection of images, the rebuses focusing on love are the most numerous and well structured, and possibly close to the final version. However, I believe that love-rebuses occupy so much space in his notebooks because Leonardo wanted to assimilate the rebus tradition, which focused almost entirely on

⁵³ Cf. Leonardo da Vinci, *Rebus*, Augusto Marinoni, ed. (Milan: Silvana Editoriale, 1983), 22-3.

love. And yet, among Leonardo's themes, surely the love-rebuses do not particularly strike us, but those containing his reflections on the value of artistic endeavor, time, and Fortune.

A prominent example of a contemporary rebus focusing on love is included in Andrea Boiardo's *Filogine*, written at the Ludovico il Moro's court around 1490—when Leonardo was also working there. *Filogine* shows two examples of *imprese* that are composed of images only and, for this reason, condemned by Scipione Ammirato. The first is a large ruby, symbol of the sun, and a black feather, which the lover Adriano attaches to his hat as a pledge of loyalty to the beloved Narcisa before leaving on a long journey. It symbolizes: “Sol la pena è mia” (‘All the pain is mine’). Similarly, Leonardo also composes a rebus made of only words, rebus 147, combining drawings of seeds (*semi*), a hook (*amo*), and curvy lines standing for head of hair (*chiome*): “Se mi amassi come...” (‘If you loved me as if...’).⁵⁴ Another example of a rebus on love is the *Strambotto ziferato*, an engraving contained in the first edition of the *Filogine* (1508). This is considered the first printed rebus, designed by a certain Tibaldo. Finally, we also have Gian Giorgio Alione's *Opera iucunda* (1521), which uses 24 image-strips to recount the story of a beautiful lady's unfaithfulness.⁵⁵ Some of Leonardo's rebuses lead us back to these examples—which are, precisely, modes of expressions typical of the early modern age.

For instance, Tibaldo, Alione, and Leonardo use the substitution of syllables with musical notes, and few analogous recurring images. In Leonardo, we find rebus 88 that combines a hook

⁵⁴ Marinoni, *I rebus di Leonardo*, 204.

⁵⁵ Leonardo da Vinci, *Rebus*, Marinoni, ed., 11-12.

(*amo*) and a musical staff with the notes *re mi fa sol la* ('D' 'E' 'F' 'G' 'A') to signify: "L'amore mi fa sollazzare" ('Love amuses me').⁵⁶ Similarly, Alione in order to say "Ma tutelle" ('My worries') illustrates a flagpole (in French, *mât*), the musical note C (*ut*) and a wing (*elle*).⁵⁷ Tibaldo both uses musical notes—such as in "l'ardore," composed of an image of lard (*lardo*) and the note *re*—and recurring images—hair for *come*, and a woman with a sail representing *Fortune* (Figure 1-10).

Leonardo's word-and-image combinations are drawn from his study of Latin and the rebus tradition with the exact same process of word-derivation that is at the basis of the lists of words. Exemplary is the association of the plant of sage (*salvia*) with the idea of safety. Accordingly, the name of this plant comes from the Latin *salvus* ('saved') because of its healing properties. This word brings us back to the already mentioned double meaning that Leonardo confers to the word *salvatico*, defining both 'one that saves' and 'one that is saved.' Curiously, Leonardo twice associates concepts of 'saving' and 'safety' to words referring to plants.

⁵⁶ Marinoni, *I rebus di Leonardo*, 204. In his rebus, Leonardo extends the method of the multiplication of musical notes to the realm of numbers. In this way, we have sequences such as *fa 5 sto*, meaning "faccin questo" ('they shall do this'); *7 giādo*, "setteggiando" ('leaning towards'); *onde 8 orto*, "onde ho torto" ('for which I am wrong'). Ibid., cats. 23-5.

⁵⁷ The comparative analysis between Leonardo's rebuses and Alione's *Opera iucunda* shows that emblems are always to be read in a specific linguistic context. Effectively, they lose their meaning if they are translated into languages different from the original.

Salvatico—from the Latin *silvaticus*, derived from *silva* (woods)—is, in fact, originally said of plants that grow spontaneously without cultivation.⁵⁸

The most common occurrences in Leonardo, Tibaldo, and Alcione are mainly icons corresponding to semantic unities which also belong to verbal communication and, therefore, can be defined as elements of a universal language. Among others, the icons of Fortune (a person holding a veil), death (a skull), the world (a globe), money (small discs), or symbols like books, faces, ants, flames, etc. In his rebuses, Leonardo often used universal icons, but always preferred peculiar subjects or combinations not yet evident in the history of the genre.

The catalogues of Leonardo's pictographs focus on animals, particularly birds such as larks, owls, doves, crows and carrion crows, sylvan birds, sparrows, quails and partridges (*alodola, civette, colomba, corbo, cornacchia, montanello, passere, quaglie, starne*) and insects such as bees, cicadas, ants and flies (*ape, cicala, formiche, mosca*). However, the most productive categories are indeed plants, trees, fruits: reed, enula, ivy, fern, hay, laburnum, mallow, mint, millet, peach, sage, savin, cypress, cornel, pear, pine, root, seeds, sunflower, wheat, rice, garlic, onion, leek, turnip, fennel, sour grapes, date, fig, fava bean, mulberry, nut and pine cone (*canna, ella, ellora, felice, fieno, maio, malva, menta, miglio, persa, salvia, savina, cipresso, cornale, peropera, pino, radice, semi, girasole, grano, riso, aglio, cipolla, porri, rape, finocchio, agresto, dattero,*

⁵⁸ As David Marsh suggests, “salvi a me,” could be also interpreted as ‘salve (d)a me.’ See Ernout and Meillet: *saluia* < *saluus*. *Saluia* was a cult name of Persephone/Proserpina, and *Saluius* the name of a gens, e.g. the emperor Otho. The identification with our sage is secondary. Pliny mentions sage (22.147) and a different plant (26.31). He associates the first with Greek *eleisphacon* which is sage as mentioned in Theophrastus and Dioscorides. For the connection of *salvia* with saving/healing in medieval herbalists, see the following Chapter.

fichi, fava, more, noci, pigna); natural elements: stone, rock, grass, hill, mountains, air, waves, flames, fire, smoke, sun and moon (*sasso, rocce, erba, colle, monti, aria, onde, fiamme, foco, fumo, sole* and *luna*); and hand-made objects: candle holder, candles, keys, bed, reel, bowls and little bowls, gold, money, and many others (*candelieri, candele, chiavi, letto, aspo, scodelle* and *scodellini, oro, danari*, etc.).⁵⁹ These very subjects frequently recur in other contemporary Da Vinci's texts, such as the fables and the bestiary, and in his botanical and engineering studies.

Leonardo not only enriches the traditional repertoire with subjects derived from other fields of his primary interest, but he also selects words that connote a specific quality of the subject. In this way, he creates multiple and recurring links between a particular image and the subjects it represented. In this respect, interesting are the rebuses concerning time and artworks, such as the sequence 29-33:

Da dì preteriti insino a questo tempo non ò fatto mai alcuna opera, ma io so che le presenti mi facciano trionfare.⁶⁰

The text might refer to Leonardo's confession to Ludovico il Moro that the Sforza equestrian monument was not yet ready, with the promise to complete the work.⁶¹ In 1490, Leonardo had been working on the monument for around eight years, so that il Moro was definitely looking for a more rapid artist. According to this interpretation, rebus 29-33 probably belongs to a series

⁵⁹ Cf. Vecce, "Parola e immagine," 28.

⁶⁰ Leonardo da Vinci, RL 12692r. "For many years up until now I have not done any artwork, but I know that my current works will glorify me" (my translation).

⁶¹ See Marinoni, *I rebus*, 129-30. In 1482, Ludovico il Moro commissioned Leonardo to construct this monument—also known as *gran cavallo*—to the duke's father Francesco. However, Leonardo never completed the work, which was intended to be the largest equestrian statue ever realized.

concerning Leonardo's personal life, and his difficult relationship with Ludovico.⁶² This rebus can be linked to a fragment from the Codex Atlanticus (fol. 335v.a), where we read:

Opere di fama per le quali io potessi mostrare a quelli che verranno ch'io sono sta<to>.⁶³

Even though we cannot argue about these rebuses' function, they show that Leonardo was more concerned about the fortune of his artworks—and, therefore, their immortal fame—than about any economic gain.⁶⁴ Accordingly, we can identify in the catalogue of pictographs—and in many other *loci* of Leonardo's production—the recurring coupling of notions of *opera* ('artwork') and Fortune which is at the basis of these rebuses.

In Leonardo's rebuses, the word *opera* is expressed with the letter *o* followed by a drawing of a pear. Both Tibaldo and Alione used the fruit for the representation of the conjunction *per* and the rendering of the word *espoir* ('hope') to compose traditional rebuses on the theme of love. Respectively, Tibaldo by means of the letter *e*, the drawing of a pear, a helmet, the measuring unit *staio*, a ruined wall (*ruina*), the letter *l*, and the image of a *heart* signifies: "E per celata star ruina 'l core" ('...And she consumes the heart by hiding herself'). Alione combines the figures of a mountain (*mon*), a glass plate (*bones*), a pear encircled in the letter *t* (*poir en te*),

⁶² Rebuses of this kind are: "or ci cala la Fortuna le vele;" "siamo scarico di vergogna;" "po' ricevette colle mani, ma se posso mai fare;" "m'assomiglio alla formica;" "I esco delle necessità;" "chi attende a fare / pagane la pena / già fummo." Marinoni, *I rebus*, cats. 34, 35, 36, 108, 110, and '693 I, II, III. Cf. Vecce, "Immagine e parola," 30.

⁶³ Leonardo da Vinci, Cod. Atl., fol. 335v.a. "Famous artwork through which I could show to future generations what I was." My translation, and addition of syllable *to* in Marinoni's transcription.

⁶⁴ See Calvi, *I manoscritti*, 17.

a thimble (*de*), and the plant forget-me-not (*myosotis*) to say: “Mon bon espoir ente de noubliemie” (‘My good hope, bud of forget-me-not’).

Strikingly, Leonardo uses the pear eight times in his collection (in rebuses 11, 31, 55, ‘695, 94, 114, 116, and 149), and he always depicts the pear upside down. With rebus 11, he creates the visual unit *o-pera*, which links for the first time—and permanently, in the collection—capsized pears and artworks. The same unit appears in the already quoted sequence 29-33 and, doubled, in rebus 55. Here, the drawings of a trunk, two pears, and the musical notes *si*, *la*, *fa* stand for “C’a sapere si la fa” (‘If you know how, you can make it’). Then, rebus ‘695 uses an inverted pear for the conjunction *per*, as in Tibaldo: “Amore per altr’amore è corrotto” (‘Love is diverted by another love’). Rebuses 94 and 116 use it to refer to the plant *pero* and the conjunction *però* (‘however’): “Però se la Fortuna mi fa felice tal viso asponerò (‘However, if Fortune will please me, I will show that face’);” “Però tribolo, onde...” (‘However, I suffer, because of’). Finally, in rebus 114 (“gran vituperio”) the pear plant stands for ‘(great) insult.’

The occurrences of the pear-pictograph show three particularly interesting ways in which Leonardo uses it. First, the icon of the pear contributes to define the terms of ‘work of art,’ ‘knowledge,’ and ‘insult.’ Second, it introduces adversative propositions on Fortune, and phrases on the theme of taking action. Third, being always represented upside down, it recalls an idea of revolution—or change, reaction. We should also mention that, among other fruits, the pear formally allows for a sudden turnabout. In other words, it has so little weight on top that it is easily overturned. Leonardo’s pear-pictograph conveys a meaning that overcomes the simple

illustration of a term; moreover, it characterizes the depicted object with terms belonging to the semantic field of productivity, knowledge, and Fortune—meaning the overturning of a situation. Curiously, the very same themes are found in Leonardo's fable of the pear tree. This demonstrates an application of the pear's visual unit to more complex narratives:⁶⁵

Vedendo il lauro e mirto tagliare il pero, con alta voce gridarono: "O pero, ove vai tu? Ov'è la superbia che avevi quando avevi i tua maturi frutti? Ora non ci farai ombra colle tue folte chiome." Allora il pero rispose: "Io ne vo coll'agricola che mi taglia, e mi porterà alla bottega d'ottimo scultore, il quale mi farà con su' arte pigliare la forma di Giove iddio, e sarò dedicato nel tempio, e dagli omini adorato invece di Giove, e tu ti metti in punto a rimanere ispeso storpiata e pelata de' tua rami, i quali mi fieno da li omini per onorarmi posti d'intorno" (*fab. 23.*)⁶⁶

The fable tells about the laurel and the myrtle trees which are envious of the pear tree's fertility. In the face of their insults, the pear tree does not complain and shows trust in the destiny that was established for it by human culture. The pear tree can, therefore, become the

⁶⁵ The fable of the pear tree is extensively discussed in my article "Le favole di Leonardo da Vinci, 23-43. Cf. also Vecce and Cirnigliaro, *Leonardo: favole e facezie*.

⁶⁶ Leonardo da Vinci, Cod. Atl., fol. 67r.a; *Scritti Letterari*, Marinoni, ed., n. 2. "Seeing a pear tree cut down, a laurel and a myrtle cried out in a loud voice: 'O pear tree, where are you going? Where now is the pride you displayed when you bore ripe fruit? No longer will your thick foliage give us shade.' Then the pear tree replied: 'I am leaving with the farmer who cuts me down. He will take me to the studio of a fine sculptor, whose art will fashion me into an image of the god Jupiter. Dedicated in a temple, I shall be worshipped by men in Jupiter's head. But you must prepare to be frequently maimed and stripped of your branches, which men will place around me to do me honor'." Transl. Marsh, *Renaissance Fables*, 295. I include here also Richter's translation, which nicely follows Leonardo's punctuation, but rules against its literary narration flow: "The laurel and the myrtle seeing the pear tree cut down cried out with loud voices: 'O pear tree, whiter are you going? Where is the pride you displayed when you were covered with ripe fruit? Now you will no longer shade us with your dense foliage.' The pear tree replied: 'I am going with the husbandman who has cut me down and who will take me to the workshop of a good sculptor and he will by his art give me the form of Jove, the god; and I shall be dedicated in a temple, and shall be adored by men in place of Jove, while you are bound continually to be maimed and stripped of your boughs which will be placed around me to do me honour'." Transl. Richter, *The Notebooks*, 221.

statue of Jupiter by carrying out one of the functions that, according to Pliny, are typical of honorable plants.⁶⁷

The pear tree represents productive beauty as opposed to the laurel and the myrtle trees, symbols of traditional beauty, that is, *vanitas*. He also shows a practical knowledge that foresees the changes of events at the basis of (his) fortune. The coincidence of concepts enclosed in the two artistic modes of expression—the rebus and the fable—show the internal link between them, and Leonardo’s attempt to relate the physical properties of an element, the word that designates it, and its formal qualities and intrinsic nature.

In the collection of Leonardo’s pictographs, there are many other examples of visual units which highlight recurring formal and inner properties of a subject. For instance, on the notes of “gran vituperio” (‘great insult’)—a drawing of wheat (*grano*) followed by vines (*viti*) embracing a pear tree—we have “gran calamità” (‘great natural disaster’) and “gran nocimenti” (‘great damages’) (Figure 1-11). Here, wheat is juxtaposed first to a stone (*calamita*), and then to couples of nuts (*noci*) and chins (*menti*). The same process is at the basis of “una pena” (‘a pain’)—the number one, a bee, and the syllable *na*—, and “fia matto” (‘be crazy’)—flames, and the syllable *to*. It is not by chance that in Leonardo’s literary writings—such as his fables and prophecies—plants and animals that keep company to the vine tree have very short lives, and

⁶⁷ In book XII of the *Naturalis Historia*—which is surely a reference text for Leonardo’s treatment of plants—Pliny talks about trees’ honor and soul. Additionally, he argues that they provide unique nourishment for human beings, and enlists illustrious functions to which plants serve. One of them is being statues of gods: “de gli alberi facevano gli antichi le statue de gli dii.” Plin. *Nat.*, XII, 1-2; Pliny The Elder, *Historia Naturale di C. Plinio Secondo di latino volgare tradotta per Christophoro Landino* (Venice: Thomaso de Tetnengo ditto Balarino, 1534), XII, 1-2.

stones are generally protagonists of natural disasters. At the same time, bees always cause pain while nuts suffer a tragic destiny, and fire is a proud, unpredictable character.

Finally, in the combination of these visual units, it is possible to recognize a proper iconic grammar and syntax. For instance, the multiplication of an individual element signifies the morphological change in number. This happens in visual units—see above the doubling of nuts (*noce* > *noci*) and chins (*mento* > *menti*)—and in more complex visual sentences, such as “Or ci cala la Fortuna le vele,” (‘Now Fortune drops us the sails,’ i.e. ‘now Fortune abandons us’) from RL 12692r. In this case, the replication opens and closes the period: little golden shafts (*orcio* > *orci*) are followed by the drawing of a cicada, the music note *la*, a man with a sail representing Fortune, the syllable *le*, and a sketch of two sails (*vela* > *vele*). Similarly, on the syntactical plan, Leonardo uses verbal functions to identify actions that refer to the primary icon. Therefore, in rebus 73 “piango a tavola” (‘I cry at the table’), Leonardo indicates the verb *vola* by the addition of wings to the icon of a cat for *gatta-vola* (‘flying cat’) and in rebus 64, *lionardeschi* (‘by Leonardo,’ or ‘Leonardesque’) he shows flames that surround a lion to render the verb *arde* of *lion-arde* (‘burning lion’) (Figure 1-12).⁶⁸

⁶⁸ In one occasion, Michelangelo uses a little drawing of a crow as part of his signature that can be compared to Leonardo’s pictographs of the lion (Michelangelo, poems and letter to Luigi del Riccio, *Corpus* 367r, Archivio Buonarroti XIII, fol. 33). Cf. Barkan, *Michelangelo*, 78. We do not have other instances in which the two artists address themselves with pictographs; therefore, it is difficult to make a statement about reasons and purposes behind the choice of these particular animals. Suffice it to say, Michelangelo’s bird connects with words—poetry, as well as chitchatting, in this case—, and ironically recalls his renowned poetic attempts. Leonardo’s lion can also be interpreted as a significant symbol of the artist’s personality, given that Leonardo frequently uses the animal in his manuscripts. The lion can symbolize strength, of

Leonardo's collection of images consists of a visual lexicon that opens up to the possibility of creating complex messages in other fields of research. Contemporary attempts in emblem theory support the hypothesis that Leonardo could have aimed for the construction of a lexicon of images. In this respect, exemplary is Lomazzo, who proposed a technique of artificial composition of natural portraits through a lexicon of hieroglyphics. Lomazzo applied hieroglyphs to a set of portraits in order to highlight their specific moral or abstract traits.⁶⁹ With his pictographs, Leonardo showed that he achieved something similar in the depiction of moral and formal qualities of his subjects. However, Leonardo's project does not limit itself to a visual alphabet, but operates parallel to his words' cataloguing, as previously demonstrated, to find applications in other fields of knowledge.

1.1.3. Dì della voce per l'aria: *Leonardo's Visual and Textual Lexicon*

Folio 17v contains a very peculiar case of an emblematic sentence serving as a title for the folio, which testifies to Leonardo's theoretical purpose in his collection of words and images. The folio illustrates the first stage of the artist's project for the creation of his textual lexicon, its development into a visual form and, finally, its application to complex narratives. According to Marinoni:

course, but more probably has to deal with Leonardo's conception of himself as *salvatico* (wild, uncultivated), precisely because he is not a man of letters.

⁶⁹ Cf. Giovanni Paolo Lomazzo, *Trattato della pittura, scoltura et architettura* (Milan: Paolo Gottardo Pontio, 1586), VI, 52.

[...] certi appunti, come “dì della voce per l’aria” indicano un proposito di attività non pratica ma teorica ossia l’intenzione di scrivere un trattato o per lo meno una pagina di filosofia naturale, in particolare di acustica.⁷⁰

Leonardo must have been well aware of the relevance of this page, so that he supplied it with the drawing of an index finger in the manner of the scribal *manicula* (‘little hand’). These little hands were pointers that copyists used to place beside crucial passages of a manuscript.⁷¹

Folio 17v mainly consists of a list of words pertaining to the semantic field of ‘air,’ accordingly grouped under the entry *aria*. At the top of the page, the title reads: *Dì della voce per l’aria*. The use of the term *voce* (‘entry’) is significant with regard to Leonardo’s project of

⁷⁰ Marinoni, *Introduzione*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XIV. Another very peculiar case of “title” in the Codex Trivulzianus is that on fol. 6r, reading: “sugietto colla forma.” The note is, in fact, followed by interweaving fragments on the topic of various forms in relation to different subjects, and on satisfaction derived from their union (the artist with the art piece, the lover with the beloved, the sense with the perceptible, the weight with its source of rest, the known object with the mind). Even though the title of the folio evidently refers to a philosophical theme, Leonardo seems to take it from a phenomenological perspective. According to him, movement is the product of energy, which corresponds not to a constant and perennial flow. On the contrary, Leonardo’s movement is an impetus, an appetite, or a momentary desire that runs towards its object and unites with it. Ibid, XIX.

⁷¹ Books belonging to Leonardo’s library might have contained a wide number of *manicula*, as they are the most likely source of this drawing. Leonardo probably copied *manicula* from his library books, and used them as models for possible interactions of images and text. An exemplary text that could have inspired Leonardo is the incunabulum *Inc. C3d2*, one of the vernacular editions of Pliny’s *Naturalis Historia*—in Italian *Historia Naturale*—by Cristoforo Landino, which is preserved at the British Library in London, United Kingdom. On page XXIX, for instance, the scribe notes on the right margin the words *salamandra* (‘salamander’) and *vulture*, in correspondence of the chapters describing these animals. In order to highlight particular sentences in the paragraphs, the scribe also uses four *manicula* and delicate braces (a sort of floral curly brackets). See the following section (1.2.2 *Pliny*) for a more detailed analysis of this incunable. In an email exchange dated December 7-8, 2014, Carlo Vecce confirmed that there is no record in Leonardo’s corpus of manuscripts of index fingers similar to the one of Cod. Triv., fol. 17v. Hands are certainly protagonists of many anatomical studies preserved at the Windsor Collection, and subjects of related careful descriptions. Other famous ‘hands’ drawn by Leonardo are those of Ginevra de’ Benci, probably modeled after a sculpture by Verrocchio. See *Leonardo da Vinci, 1452-1519: The Design of the World (Palazzo Reale, Milan, April 16-July 19, 2105)*, Pietro Marani, and Maria Teresa Florio, eds. (Milan: Skira, 2105).

forming his visual and textual vocabulary. In this perspective, it is possible to interpret the following sentence as the title of a list of words concerning the air:⁷²

Suavità / resolta / resoluta / glaciale / devotione / intenso / attento / sottilità [...] plecipitare / plecipue/ esalare / evacuare / chollocare / chonfutare / desiato / ottima / copioso / odorifera / .aulente / spetiosa.⁷³

The list continues on 18r:

Sinciera / imaculata / lochato / mirabile / esplicare / .a<n>plitudine / splemere / inarrare / illustratione / interchiedere / serenissimo / volteggiare.⁷⁴

What strikes here is that similar words are re-used on the subsequent folio to compose a natural observation concerning air and the nature of the effect of the thunder of the cannon:

Natura dello effetto del tono della bombarda.

Il romore delle bombarde è causato dall'*impetuoso* furore della fiamma ripercosso in nella *resistente* aria, e fa questo effetto della quantità della polvere che si truova accesa nel corpo della bombarda. Non si sen<t>endo in loco capace di suo *accrescimento*, la natura lo dirizza a cercare con furore il loco recipient<te> a' suo *accres<c>imento*, e rompendo o sgombrando l'ostaculo più debole, giugne infra la *spaziosa* aria, la quale non sendo atta a fuggire con quella velocità ch'ell'è assalita, perché il foco è più *sottile* che l'aria, conviene che l'aria che non sendo

⁷² Similar titles are present in other folios by Leonardo, usually referring to memos or themes that he promised himself to develop in the future. This case is, however, quite different, because the title is followed by text that appears to be its own development. Marinoni already suggested exemplary themes to develop the sentence *Dì della voce per l'aria* (51). Along with the military instructions regarding the 'Greek fire,' he mentioned caltrops (*triboli*), and bombards (48-49). The critic also noticed the recurrence of definitions ('of Medicine,' 7, 'of the Pharisees,' 68), aphorisms about the brevity of life (32) and the passing time (68), and significant quotations from Valturio (such as those regarding Cornelius Celsus, 4, Demetrius, 57, and the Gauls, 22. See: Marinoni, *Introduzione*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., XIII.

⁷³ Leonardo da Vinci, Cod. Triv., fol. 17v; "suavity / resolved / resolute / icy / devotion / intense / intent / subtlety [...] to fall down / principal or chief / to exhale / evacuate / to collocate or place / confute / desired / best / copious / odoriferous / fragrant / extraordinarily beautiful (f.)." Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 183.

⁷⁴ Leonardo da Vinci, Cod. Triv., fol. 18v; "sincere (f.) / immaculate (f.) / placed / marvelous / to explain / amplitude / to squeeze / *inarrare*—to narrate (?) or *inaridare* (?)—dry / illustration / to intercede / most serene / to flutter about." Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 182.

di pari *sottigliezza* che 'l foco, non li po dare loco con quella *velocità* che 'l foco l'assale, onde accade *resistenza* e la *resistenza* è causa del grande strepido e romore della bombarda. Ma se la bombarda traessi contro all'avvenimento d'uno *impetuoso* vento, sentiresti maggiore tronito fatto per la cagione di maggiore *resistenza* d'aria contro alla fiamma, e così farebbe minore romore, quando traessi per la linia del vento, perchè li sarebbe men *resistenza*. In ne' luoghi paludosi o d'altre arie *grosse*, la bombarda farà maggiore romore da presso e men lontano si sentirà che in su' monti <o> altri lochi di *sottile* aria. Se l'aria fia *grossa* o *sottile* equalmente e senza movimento di venti, il romore fia equalmente sentito intorno alla sua causa e andrassi di circolo in circolo spargendo a similitudine che fanno i circuli dell'acqua causati dal gittato sasso infra essa, e in quel loco dove fia tratti simili strumenti, l'aria visina romperà o moverà tutte le cose di debole *resistenza*: rotti fieno tutti i vasi grandi, larghi in bocca, finestre di carta e simili cose, mossi fieno tutti i tetti visini d'in su' loro sostegni, e questo accaderà quando molte finestre e usci fieno aperte e porteranno pericolo i sottili e disarmati muri. Questo accade che l'aria sgonfia e prieme e vol fuggire per tutti i versi. In quanto al movimento, mosso fieno usci, finestre, alberi e simili cose. E se porrai una freccia poco fitta con una piccola pietra su per ispazio di 6 miglia per lo movimento dell'aria caderà.⁷⁵

⁷⁵ Leonardo da Vinci, Cod. Triv., fol. 18v. Italics mine. Here is the English translation: "Nature of the effect of the thunder of the cannon. / The noise of the cannon is caused by the impetuous furor of the flame rebounding upon the resisting air and making this effect. That quantity of powder which finds itself lit in the body of the cannon not finding itself in a place capable of being enlarged, nature directs it to find with furor the place big enough to receive the expansion and breaking the encumbering weakest obstacle reaches the spacious air, which not being able to flee with the same velocity with which it is attacked (because the fire is more fine than the air), it happens that the air, not being of the same fineness as the fire, cannot give it any space. With that velocity and haste which the fire assails it therefore it meets resistance and the resistance is the cause of the great rumble and noise of the cannon. But if the cannon is aimed against an impetuous wind you would hear more of the sound made because of the greater resistance of the air against the flame, and so it would make less noise when it is aimed with the wind because of less resistance. / In swampy areas or where the air is heavy the cannon will make more noise and it will be heard less far than on top of the mountains and thus places of fine air then where the air is heavy. And if without movement of wind the noise is equally heard around its cause and it will go in ever-enlarging circles which occur in the water caused by a stone being thrown in, and in that place where are carried some instruments the air close by will break all the places or move all the things of weak resistance. All vases with large mouths, windows of paper and such things are broken. All the roofs of houses close by are moved and will almost fall when the windows and doors are open and will bring about to perish the light and weak walls. This happens because the air expands and wants to flee everywhere in its great movement. Doors, windows, trees and similar things are moved. A pole fitted with a little stone over six miles distance fell because of the movement of the air." Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 181. Modified translation in collaboration with David Marsh.

Leonardo talks precisely about the interaction between air and the fire of the cannon, which are personified and portrayed in an assiduous pursuit. Depending on the stage and the conditions of the combat, air is defined as *suttile* ('subtle') or *grossa* ('thick'), *spatiosa* ('spacious'), and *resistente* ('resistent')—adjectives which well reflect the meanings of the terms *suttilità*, *anplitudine*, *mirabile*, and *resoluta* in the preceding list of words on fol. 17v. Similarly, the phrase “avvenimento d'un impetuoso vento” ('the sudden arrival of a wild wind') is well reflected in the terms from the same list: *volteggiare*, *intercedere*, *intenso*.⁷⁶

At this point, I lean towards the hypothesis that, along with the alphabetical ordering of the words, Leonardo was also reorganizing them according to thematic-semantic fields. Accordingly, the words seem to have not only a mnemonic function, but to serve a practical purpose. Leonardo's accumulation of terms pertaining to this field is a unique repertoire for the definition of the air-character to be used in his major visual and literary expressions.

When we turn to Leonardo's catalogue of images we are not surprised to find various visual representations of the air. Curvy lines which create the contour of a cloud—“quasi un

⁷⁶ At the top of the page, we have few other notes that refer to practical suggestions on how to take advantage of some properties of natural elements: “A chi dà noia al vomito il navigare, debba bere sugo d'assenzio. / L'acqua del mare colata dal fango over terra arzilla lascia in quella ogni salsedine. / Le lane tesse alle sponde del navilio sorbiscano l'acqua dolce. / Se stili con canpana l'aqua marina, fia in principale eccellenza; e adattando un fornello alla sua cusina, quelle medesime legne che cocano, stilleranno una grande quantità d'acqua, se la campana fia grande” (Cod. Triv., fol. 18v). Follows the English translation: “Whoever is annoyed by vomitating while on a sail must drink the juice of the absinthe plant. / Sea water strained by mud or true argillaceous earth leaves behind it all its saltiness. / Wool stretched over the bow of the boat absorbs sweet water. If distilled with a bell the marine water will be in the main excellent and adapting a little furnace in your own kitchen that same wood which cooks will distill a great quantity of water as large as the bell is.” Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 181.

contorno di nuvole,” as Marinoni defines it—appear on rebus 13. This rebus means “Colpa n’è la ria Fortuna” (‘The culprit is the guilty Fortune’) through the images of a hill (*colle*), a piece of bread (*pane*), the curvy lines for the air (*aria*), and a man moving a sail in the wind representing Fortune (*Fortuna*).⁷⁷ The image of the air is interlaced to that of Fortune both on a visual and conceptual level, in a way that reenacts traditional representations. Typical traits of Leonardo’s *Fortuna* are, in fact, perfectly outlined in Giovanni Paolo Lomazzo’s treatise:

Gli antichi ancora la fecero pelata doppo la nuca, con longhissimi capelli e velocissima a correre, come la scolpi Calistrato [...]. La Mala Fortuna che dà le disaventure et i travagli, si fa giovane, spensierata, con le chiome sparse al vento, sopra una palla rotunda, in atto di non sapere dove girarsi, con un timone in mano. Ma gli altri gli ponevano una vela sopra la ruota fra le onde del mare, et altri l’involgevano in un panno sottile, nel quale aveva raccolto tutti gli ornamenti del mondo; et altri ancora la finsero cieca, pazza, incostante, volubile e con le ali, sì come fu dipinta da Apelle.⁷⁸

Leonardo’s air representations standing for Fortune are two running people in rebuses 4 and 100 with hair covering up their faces. They are labeled, respectively, *ventura* and *venture* (‘fortune’ and ‘fortunes’).⁷⁹ At the previously mentioned rebus 34, Fortune is again associated with sails moved by the air, which have the same meaning of *vele* (‘sails’) both in the visual and written form. Here, the drawing is accompanied by that of a cicada (*cicala*), the musical note *la*, the person with the sail (*fortuna*), the syllable *le*, and the sketch of two sails (*vele*): “Or ci cala la fortuna le vele” (‘Now Fortune drops us the sails,’ i.e. ‘now Fortune abandons us’). This is an

⁷⁷ See Marinoni, *I rebus*, 159.

⁷⁸ Lomazzo, *Trattato della pittura, scoltura et architettura*, VII, 29.

⁷⁹ Rebus 100 reads: “Diecci migliore ventura” (‘We had given better fortune’), and rebus 4: “Co’ lombarde venture” (‘Thanks to / with Lombard ventures’). Cf. Marinoni, *I rebus*, 159.

example in which the content of the rebus is reflected in the properties belonging to the objects described by the images.

The air in form of wind is identified with the idea of a changeable and malicious Fortune. The drawing in rebus 13 representing the air designates, in fact, Fortune as *rea* ('guilty'), while connecting the concept of air with that of Fortune. *L'aria - Fortuna* ('the air' - 'Fortune') becomes "la rea Fortuna" ('the guilty Fortune'). At the same time, in rebus 34, Fortune is associated to the sails moved by the wind, and the sketch of the sails is used to connect Fortune with the idea of misfortune in the expression: "calare le vele" ('to drop the sails').

Fortune is also represented in rebus 16, in which Leonardo expresses another time the concept "Colpa della Fortuna" ('Fortune's guilt') thanks to the profile of a hill, a pan, and the man with the sail. The already mentioned rebus 94 is more articulate: Kim Henry Veltman already used it as an illustration of the visual power inherent in Leonardo's verbal images. A pear tree (*pero*), a saddle (*sella*), the musical notes *mi* and *fa*, a fern (*felce*), the syllable *ta*, a face (*volto*), and a dark wool-winder or reel (*aspo nero*) stand for: "Però se la Fortuna mi fa felice tal viso asponerò" ('However, if Fortune blesses me, I will show such a face') (Figure 1-13).⁸⁰ Even if there is no direct link between air/wind and misfortune, the adversative conjunction *però* shows that this is an isolated case: more often Fortune brings misery than happiness. Furthermore, the tiny drawing of the face illustrates an astonished character or, perhaps, a soldier, to connect with the idea of boldness. The face is accompanied by the demonstrative

⁸⁰ Cf. Leonardo, *Rebus*, 199.

adjective *tale* ('such'). This suggests that the astonished or bold expression is a reaction to the unexpected outcomes of Fortune.

Curiously, Leonardo's icons of Fortune, air, and wind correspond to those designating water and waves, which are analogously represented in form of curvy lines. Water appears in the already mentioned sequence 29-33 in the form of repeated drawings of curvy lines for *acque* ('waters'), to signify "insino a questo tempo" ('up until this time'). The same icon appears seven times accompanied by the captions *onda/onde* ('wave'/'waves') to create the sentences: "onde ò torto" ('whence I am wrong': rebus 25), "onde morta ro..." ('whence I find death': 92), "onde sol quest'aderenti" ('whence only these associates': 103), "però tribolo, onde" ('but I suffer, whence': 116), "onde ò qua trovato" ('whence I found here': 128), "onde però ancora fia ascoso" ('whence it is yet hidden': 149), "ond'accordate" ('whence you agree': 150). In these cases, the word *onda* does not designate the object represented but, more likely, the causal relative pronoun *per cui / con cui* ('whence,' 'for which' / 'with which').⁸¹

By visually linking wind, air, water, and waves, Leonardo establishes a metaphorical tie between these empirical phenomena and Fortune, suggesting that natural laws are at the basis of the interaction of elements. In addition, Leonardo's illustration of the word *come*, which refers to 'manes,' formally belongs to the same group, and extends the metaphor to the human sphere. It is possible to distinguish between water, air, and manes only because Leonardo associates them

⁸¹ In this context, 'onde' can also have the function of an adverb of movement and origin, meaning *da dove* ('from where'), or that of final conjunction *affinchè* ('so that').

with respective captions. This particular metaphorical tie does not restrict to rebuses, but pervades Leonardo's entire *oeuvre*. For example, two sketches identified as preparatory drawings for *Lady with an Ermine* belonging on the *verso* of folio 110 from the Codex Atlanticus show the same formal characteristics of the icons of the air. The drawings illustrate the study of various arrangements of curls on the lady's head due to their exposure to the wind. Similar studies of manes and curly hair are juxtaposed to scientific studies of the circular motion of wind and water on folio RL 12,388 from the Windsor Collection.⁸²

Motifs of air and water are already interlaced in the Codex Trivulzianus. In fact, a few pages passed the text on the air and the cannon's fire on fol. 18v, we have another interesting note in which natural elements interact with each other. If on fol. 18v the air was opposed to the fire, on fol. 20r it is compared to the water:

L'aria si po premere e l'acqua no, e quando il movimento che la caccia è più presto che la fuga d'essa aria, quella parte che più è presso al suo motore, si fa più densa, onde più resiste; e quando il moto fatto in essa è più presto che 'l fuggire d'essa aria, el suo motore viene a pigliare contrario moto, come appare in negli uccelli. Non potendo mandare le punte delle loro alie in basso con quella velocità (ch'elli son mossi) che la forza del suo motore li move, conviene che l'uccello si levi in alto tanto quanto mancò all'estremità dell'alia a andar in basso. A similitudine dell'omo che tien le mani e 'l petto presso un muro faccia forza colle mani in esso muro; che se 'l muro non cede, bisogna che torni indrieto.⁸³

⁸² An interesting parallel can also be drawn between the aforementioned studies, Leonardo's deluge series (folios RL 12,376-85, RL 12,394, RL 12,400, RL 12,412-16 from the Windsor Collection) and the movement of the Virgin's braids in Leonardo's drawing, *The Head of the Virgin in Three-Quarter View Facing Right* (cat. 51.90), from the Metropolitan Museum of Art.

⁸³ Leonardo da Vinci, Cod. Triv., fol. 20r. "The wind pressing on the water and unable to depress it—turns on itself, making a whirlwind and this is like the bird in the air who, desiring to stay aloft pushes down the ends of its wings to keep itself up and thus may describe a loop, or again is like a man who pushing with his

The handwriting—from left to right, particularly round and airy, and replete with Lombard terms—shows that Leonardo did not transcribe this passage. It is likely he dictated it to one of his pupils. In both texts the air is depicted in the act of escaping: “la spaziosa aria, la quale non sendo atta a fuggire con quella velocità ch’ell’è assalita,” and “fuga d’essa aria.” What is new of this passage is that the air is the protagonist of a continuous metaphor on the forces of nature, which functions such as that connecting air, wind, Fortune, sails, and curls in Leonardo’s pictographs. The same natural forces that move the air, accordingly, move the birds and, finally, the man. When humans are called to take part in the metaphor, artifice comes into play as well.

Certainly, the most productive field devoted to the interaction of natural and artificial forces is that of Leonardo’s fables. Particularly, two of them, fables 44 and 48, reproduce the cycle of water as it verifies both in natural and artificial contexts. In fable 44, the continuous chasing of water and air is beautifully re-enacted as part of a picturesque condensed drama:

Trovandosi l’acqua nel superbo mare, suo elemento, le venne voglia di montare sopra l’aria, e confortata da foco elemento, elevatasi in sottile vapore, quasi pareva della sittiglieza dell’ari<a>; e montato in alto, giunse infra l’aria più sottile e fredda, dove fu abbandonata dal foco. E piccoli granicoli, sendo restretti, già s’uniscano e fannosi pesanti, ove, cadendo, la sup<erbia> si converte in fuga, e cade del ciel<o>; onde poi fu beuta dalla secca terra, dove lungo tempo incarcerata, fe’ penitenzia del suo peccato (*fab.* 1).⁸⁴

breast against a wall is turns aside by the wall and must go back.” Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 179.

⁸⁴ Leonardo da Vinci, Cod. For., fol. 2r; *Scritti letterari*, Marinoni, ed., n. 44. “The water that found itself in the proud sea, its own element, conceived a desire to rise up into the air. Aided by the element of fire, it ascended as a subtle vapor that nearly equaled the subtlety of the air. Then, as it rose higher, it passed into colder and subtler air, and was abandoned by the fire. Its small particles shrank, clustered, and grew heavy; as they sank, their pride turned to flight, and they fell from the sky. The water was then

While showing how water passes through the gaseous, aqueous, and icy state, Leonardo also gives an interpretation of its behavior. Water's evaporation is motivated by her inner desire to reach the air, for which she is almost assimilated to the latter. Aided by the fire, water rises into the cold skies, where she is transformed into hail. Her arrogant behavior is finally punished when she falls back onto the earth, which drinks and imprisons her for a long time. The fable combines subjects and attributes belonging to Leonardo's lists of words and images in the perfectly crafted short story of the water-air circular movement, and the continuous shift change of Fortune and destruction.

Arguably, Leonardo not only uses his lists of words and images to construct his fables, but also some other literary sources. In fact, there is a passage from Pliny—in the vernacular translation by Landino—that might have been Leonardo's starting point for his observations on water and air:

Maggior meraviglia fanno l'acque dolci appresso il mare, le quali zampillano a guisa di cannoni. Perciocchè la natura dell'acque fa de' miracoli anch'ella. L'acque dolci stanno di sopra in mare, siccome quelle, che senza dubbio son più leggiere. E perciò l'acqua marina, che per natura è più grave, sostiene più le cose, che vi son messe dentro. Alcune acque dolci ancora fra sè scorrono sopra l'altre.⁸⁵

drunk by the dry earth, where it was imprisoned for a long time and did penance for its sins." Transl. Marsh, *Renaissance Fables*, 281.

⁸⁵ Pliny The Elder, *Historia Naturale di C. Plinio Secondo di latino volgare tradotta per Christophoro Landino* (1476, repr. Venice: Thomaso de Tetnengo ditto Balarino, 1534), II, cvi. Even though Leonardo probably had the vernacular edition of the text, it is possibile that he also had access to the original Latin text, which I include here: "Mirabilis id faciunt aquae dulces, juxta mare ut fistulis emicantes. Nam nec aquarum natura a miraculis cessat. Dulces mari invehuntur, leviores haud dubie. Ideo et marinae, quarum natura gravior, magis invecta sustinent. Quaedam vero et dulces inter se supermeant alias." Plin., *Nat. Hist.*, 94-5, 311.

This crucial passage not only served as inspiration for the fable, but also contains interesting information in relation to the text on the air and cannon's fire on fol. 18 ν from the Codex Trivulzianus. While discussing the weight of seawater as opposed to that of the rivers' water, Pliny compares the latter to gushing cannons. Even more eloquent in this respect, is Pliny's chapter on the air:

Dell'aria. Capitolo XXXVIII.

Insino a qui del cielo e delle stelle habbiamo decto. Hora resta riferir le chose memorabili dell'aria. Gli antichi questo chiamarono cielo e per altro nome aria: che è tutto questo el quale simile al vacuo sparge el vitale spirito [...]. Le piove chaggiono. Le nebbie salgono. E fiumi si seccano. Le grandini rovinono. E razzi abronzano: e la terra da ogni parte pingono nel mezzo. Que medesimi per reverberatione ritornano in alto: e ciò che possono ne portano secho. El vapore da alto chade e dipoi in alto ritorna. E venti sopra stanno alla terra voti e que medesimi con preda tornano. Nessuno animale halita che non tiri lo spirito da alto. Lo spirito ripugna. Et in questo modo di qua e di là si muove la natura: e pinta dalla celerità del moto: chome da bombarda o da balestro: accende la discordia. Ne può stare ferma alla battaglia: ma del continuo rapita s'aggira: e circa alla terra distende le cause allo immenso globo delle chose.⁸⁶

Here, Leonardo finds a model for his entry on the air, the idea to expand on the nature of the cannon, and the repetition and intensification of the air circular movement as it takes part in the water cycle.

⁸⁶ Pliny, *Historia naturale*, II, xxxviii. Here is the Latin passage: "Hactenus de mundo ipso, sideribusque. Nunc reliqua coeli memorabilia. Namque et hoc coelum appellave majors, quod alio nomine aera, omne quod inani simile, vitalem hunc spiritum fundit [...]. Decidunt imbres, nebulae subeunt, siccantur amnes, runt grandines, torrent radii, et terram in medium undique impellunt. Iidem infracti resiliunt: et, quae potuere, auferunt secum. Vapor ex alto cadit, rursumque in altum redit. Venti ingruunt inanes, iidemque cum rapina remeant. Tot animalium haustus spiritum e sublimi trahit. At ille contra nititur, tellusque, ut inani coelo spiritum infundit. Sic ultro citroque commeante natura, ut tormento aliquo, mundi celeritate discordia accenditur. Nec stare pugnae licet, sed assidue rapta convolvitur, et circa terram immense rerum causas globo ostendit: subinde per nubes coelum aliud obtexens." Plin., *Nat. Hist.*, II, xxxviii.

Then, Cecco D'Ascoli is another relevant source for Leonardo's artistic interpretation of the water cycle, because he also speaks of the water's vapors raised from the earth by the fire, again reaching the icy air and falling down as hail—just like it happens in fable 44:

Tira il sole, li vapori levando,
da questa terra verso il bel sereno,
e l'aire poi sempre va spessando.
Salendo, se condensa a pocho a pocho,
finché è nel mezo, ove il fredo à pieno,
per gli riflessi raggi e poi per fuocho.

Stando nel mezzo degli agenti exstremi,
l'acqua si informa e, sì come grave,
vegnon a terra le soi parti insèmi.
Quant'è più fredo questo mezzo scito,
tanto più sente le tempeste grave
de le ghiazate pietre ciascun<o> lito.⁸⁷

Fable 48 tells a very similar story about the vicious circle of the water being heated by the fire in order to evaporate. However, this time, boiling water and fire burner compete for their hegemony in an artificial environment, with very different consequences.

Il foco cocendo l'acqua posta nel laveggio, dicendo che l'acqua non merita star sopra il foco, re delli elementi, e così vo' per forza di bollore cacciare l'acqua del laveggio onde quella per farli onore d'ubbidienza discende in basso e annega il foco.⁸⁸

Water is now depicted with traits of humility and she is ultimately the winner of the elements' contest—thanks, we must add here, to the stove's artifice.

⁸⁷ Cecco d'Ascoli, *L'Acerba*, Marco Albertazzi, ed. (Lavis: La Finestra, 2005), 240.

⁸⁸ Leonardo da Vinci, Cod. Forster III, fol. 30r; *Scritti letterari*, Marinoni, ed., n. 48. "The fire is cooking the water, but, being him the king of elements, he thinks water should stay below him. Therefore, he makes water boiling and the water, in order to satisfy his desire, descends and drowns him." Transl. Marsh, *Renaissance Fables*, 15.

Intriguingly, the very same scene is analyzed by Leonardo as part of an experiment on boiling water which is born from empirical observation:

* L'acqua calda si leva in alto per la compagnia dello elemento del foco che v'è dentro. E se fia uno panno bagnato mostro al foco, il caldo che s'appicca in detto umido, fa che l'umido lascia il montare allo elemento foco, perchè più potente foco lo tira a sé, ch'è la fiamma.⁸⁹

Leonardo seems interested in both defining the character of natural elements from a scientific point of view, and describing their functioning thanks to their personification and humanization by means of literature. Contaminations between scientific research and literary metaphors are also evident in the following reflection on the human soul—which significantly unites the natural elements of water, air, and fire:

De Anima. Il moto della terra contro alla terra ricalcando quella, poco si move le parte percosse. L'acqua percossa all'acqua fa circuli dintorno al loco percosso. Per lunga distanza la voce infra l'aria. Più lunga infra 'l foco. Più la mente infra l'universo. Ma perchè l'è finito non s'astende infra l'infinito.⁹⁰

The mixture between natural and artificial elements, the realms of nature and humans, and empirical investigation and artisanal skills is at the basis of folio 11v from the Codex Trivulzianus, where a striking sketch of aligned fumes—or little flames—is accompanied by a historical-didactic caption on how smoke can be used as an instrument of war (Figure 1-14):

⁸⁹ Leonardo da Vinci, Cod. Atl., fol. 218r.

⁹⁰ Leonardo da Vinci, Ms. H, fol. 67r.

Questo inganno fu usato dai Galli contro a' Romani e seguìne tal mortalità che tutta Roma si vesti a bruno.⁹¹

On Manuscript B, beneath a drawing of a tower surrounded by smoke, Leonardo recalls a trick (*inganno*) similar to that used by Gaul people against Romans:

Usano i Germani annegare i castellani con fumo di piuma, solfo e risalgallo, e fanno durare detti fumi 7 e 8 ore; ancora la pula del frumento fa assai e durabil fumo; e 'l letame secco ancor lui, ma fa sia mischiato colla sansa, cioè ulive tràttone l'olio, o vòl morca d'olio.⁹²

The sketch of the flames serves, then, to show a technique on how to stifle the enemy overnight.

However, it is also combined with a philosophical explanation about the decrease in intensity of a force, which is proportional to its diffusion in space:

Tutte le potenzie spiritual quanto più s'allontana<n> dalla prima o seconda cagione, più occupano di sito e più diminuiscano di lor valitudine.⁹³

These passages and relative sketches show not only the evident mixture of investigative methods used by Leonardo, but also his interest in the effects of natural elements—such as water or fire in the form of smoke—on artificial forces.⁹⁴

⁹¹ Leonardo da Vinci, Cod. Triv., fol. 11v. “This trick was used by the Gauls against the Romans causing such mortality that all Rome was draped in mourning.” Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 154.

⁹² Leonardo da Vinci, Ms. B, fol. 63v.

⁹³ Leonardo da Vinci, Cod. Triv., fol. 11v. “All the spiritual powers, the more they are distant from the first or from the second cause, the more they occupy (expand), the less powerful they are, they lose their power [crossed out] health light” Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 154.

⁹⁴ See Marinoni, *Trascrizioni*, in Leonardo da Vinci, *Codice Trivulziano*, Marinoni, ed., 24. Leonardo da Vinci, *Codice Trivulziano*, fol. 11v, “Leo E-Desk,” accessed January 3, 2017, <http://www.leonardodigitale.com/>.

Furthermore, folio 11v presents a list of words that arguably refers to what could have been an entry on fire. In this case, there isn't any title specifying that the words refer to fire; and yet, the codex misses a gathering exactly in this section, while the structure of the list clearly recalls that of the entry on air:

Deforme / limitare / espedita / asspro / cauto / impeto / qualità / integrità / grandezza / degnità / ornato / virile / giovane / desiderare / esercitare / spezare / eccellente / ragionevole / divo / debilitare / forestiere / enfiatione / bataglia / ministrare / mente / tesstifichare / degnità / nuocere / infiammare / celebrare / solenne / imitare / chonsideratione / rivolgersi / dispositione / dipartire / dubitantia.⁹⁵

Fire is for sure the protagonist of many pages of the Codex Trivulzianus. Folios 15-17r, for instance, display in subsequent paragraphs the functioning of the cannon, and art of melting.

One of them focuses precisely on the nature of fire:

A cognoscere la disposizione del foco.

Il foco conoscerai quando fia bono e utile, a le fiamme chiare; e se vederai le punte d'esse fiamme turbe e finire co' molto fumo, non te ne fidare, e massime quando aria il bagno quasi in acqua.⁹⁶

⁹⁵ Leonardo da Vinci, Cod. Triv., fol. 11v. "Deformed / threshold or to limit / expedited / rough or coarse / prudent / impetus / quality / integrity / greatness / dignity, rank or place / ornate / virile / young / to desire / to practice, or to instruct / to pay (?) / excellent / reasonable / divine / to weaken / stranger / swelling / battle / minister to or serve / mind / testify / to hurt / to defame / to extol or praise / solemn / to imitate / consideration / turning about in one's mind" Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 154. Note that the term *infiammare* should be translated as 'to burn,' or 'set on fire,' and not as 'to deflame,' as in Stites's version.

⁹⁶ Leonardo da Vinci, Cod. Triv., fol. 15v. "To know the disposition of the fire. / The fire is known to be good and useful when you use the flame clear. The point of the said flame should have finished giving off curls of smoke when you will have the bath melted half as fluid as water." Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 187.

Simply, this paragraph states that the fire should always be clear; this is true particularly at the final stage of the *fusione*, when the substance being heated is almost entirely melted. In case the fire is not clear, we should be aware and not trust him. The sequence on fire comes right before the catalogue entry on the air, suggesting that the two subjects were conceived and tackled at once, by similar means. Additionally, Leonardo dedicates lists of words, and titles and paragraphs on their nature and practical use to both air, water and fire.

Furthermore, like air and water, fire also features in Leonardo's pictographs. For instance, rebus 91 shows the drawing of a flame (*fiamma*) associated with the syllable *to*: "fia matto" ('he will be crazy'). Fire and flames are, therefore, assimilated to an unstable and lunatic character, both on the lexical, visual, and qualitative level. It seems that, according to Leonardo, this particular character acts on the appearance of the subject depicted, as well as on the morphology of its name. In rebuses 117 and '697 flames only signify themselves—the object 'flames'—as part of the love-sentences: "Or chi campà nelle fiamme dell'amore?" ('Who will resist in their burning love?'), and "Donde la fiamma è 'l mio cuore porta." ('The flame calls my heart to her').⁹⁷

⁹⁷ Rebus 117 is composed of golden branches (*or*), the syllable *ch*, two little bells (*campanelle*), two flames (*fiamme*), the syllable *de*, a hook (*l'amo*), and the musical note *re*. Rebus '697 features with a series of pictographs on the theme of love that have difficult interpretation. I translated the second to last image in the rebus as *cuore* ('heart'), as Marinoni suggested in his discussion of the rebus. I believe that Leonardo opted for an anatomical representation of the object, in connection with lungs and trachea. The composition begins with the words *donde* and *la*, followed by a flame (*fiamma*), two helmets (*elmi*), the word *o*, the heart (*cuore*), and a door (*porta*). See Marinoni, *I rebus di Leonardo da Vinci*, 211, 234.

Again, on the model of the water-air, Leonardo creates a sample case of terms and meanings related to fire, and then moves to more complex narratives on the same topic. Hence, he transfers the character of the fire derived from his lists of words and images to preferred fields of investigation—particularly, to his fables. On fol. 11v from the Trivulzianus, Leonardo starts his characterization of fire by collecting terms such as *deforme* ('deformed'), *aspro* ('coarse'), *impeto* ('impetus'), *grandezza* ('greatness') which he sums up in the scientific description of flames' unreliability on fol. 15v. Subsequently, thanks to his pictograms, Leonardo's fire takes on the traits of a lunatic, seductive, and destructive character (rebuses 91, 117, '697). This powerful element, able to regenerate and grow in size and vigor, in the fable environment easily becomes emblem of the insatiable and the arrogant.

Exemplary is fable 26, where the growing of the flame—and of its ego—is recounted through a thoughtful choice of lexical terms simulating gradual enlargement. In the first paragraph, the cook revives the fire, which is about to turn off:

Un poco di foco, che in un piccolo carbone in fra la tiepida cenere remaso era, del poco omore, che in esso restava, carestiosa e poveramente se medesimo notria, quando la ministra della cucina, per usare con quello l'ordinario suo cibario offizio, quivi apparve, e, poste le legne nel focolare, e col solfanello, già resucitato d'esso, già quasi morto, una piccola fiammella, e infra le ordinate legne quella appresa, e posta di sopra la caldara, sanz'altro sospetto, di lì sicuramente si parte (*fab.* 26.)⁹⁸

⁹⁸ Leonardo da Vinci, Cod. Atl., fol. 116v.b; *Scritti letterari*, Marinoni, ed., n. 34. "A bit of fire, which remained in a small coal under some warm ashes, was feeding scantily and poorly on the little moisture left there when the kitchen maid appeared to attend to her regular cooking duties. She placed some wood on the hearth, lit a match at its dying fire, and raised a flame under the wood. Then, placing a cauldron over the fire, she went away without a second thought." Trans. Marsh, *Renaissance Fables*, 303. I provide here also Richter's translation: "A vestige of fire which had remained in a small lump of charcoal among the warm

At the beginning, Leonardo uses terms denoting the fire's slowness: the fire is little (*poco*), and is located in a small (*piccolo*) charcoal, in the lukewarm (*tiepida*) ash. It is a small flame (*piccola fiammella*) with little humor (*piccolo umore*), and almost dead (*quasi morto*). But this is just the prelude to the fierce burst of the flame that immediately follows:

Allora, ralleggratosi il fo<co> delle sopra sé poste secche legne, comincia a elevarsi: <ca>cciando l'aria delli intervalli d'esse legne, infra quelle con ischerzevole e giocoso transito, se stessi tessava. / Cominciato a spirare fori dell'intervalli delle legne, di quelli a se stessi dilettevoli finestre fatto avea; e cacciato fori di rilucenti e rutilanti fiammelle, subito discaccia le oscure tenebre della serrata cucina; e con galdio le fiamme già cresciute scherzavano coll'aria d'esse circundatrice e con dolce mormorio cantando creava<n> suave sonito. Vedutosi già fortemente essere sopra delle legne cresciuto e fatto assai grande, cominciò a levare il mansueto e tranquillo animo in gonfiata e incomportabile superbia, facendo quasi a sé credere tirare tutto el superiore elemento sopra le poche legne. / E cominciato a sbuffare, e empiendo di scoppi e di scentillanti sfavillamenti tutto il circunstante focolare, già le fiamme, fatte grosse, unitamente si dirizzavano inverso l'aria, quando le fiamme più altiere percosse<r> nel fondo della superiore caldara (*fab. 26.*)⁹⁹

embers, was very scantily and poorly nourished by the small quantity of nutriment that was left there. When the superintendent of the kitchen arrived there in order to perform her usual work of preparing the food, having placed the logs on the hearth, and having succeeded by means of a sulphur-match in getting a small flame from the charcoal through it was almost extinct, she set it among the logs which she had arranged and took a cauldron and set it over it and without any misgivings went away from it." Trans. Richter, *Notebooks*, 270. On the verbal imagery expressed in this fable see Vecce, "Word and Image in Leonardo's Writings," in Bambach, *Leonardo da Vinci: Master Draftsman*, 65-66.

⁹⁹ Leonardo da Vinci, Cod. Atl., fol. 116v.b; *Scritti letterari*, Marinoni, ed., n. 34. "The fire rejoiced when the dry wood was placed on it, and began to rise up, expelling the air in the spaces between the logs, and winding its way playfully and joyfully among them. Then it began to burst through the spaces between the logs, making delightful windows of them. Emitting glowing and reddish flames, it soon dispelled the dark shadows of the closed-in kitchen. With joy the growing flames played with the air around them, and singing with a soft murmur they formed a sweet sound. Seeing itself grow vastly larger above the firewood, the fire began to inflate its tame and tranquil spirit into a swollen and intolerable pride, and nearly convinced itself that it drew in all the higher elements above the few logs. Starting to sputter and filling the entire hearth with explosions and glistening sparks, the growing flames joined and rose into the air, while the highest flames struck the bottom of the cauldron hanging over them." Trans. Marsh, *Renaissance Fables*, 303. Here is also Richer's translation for reference: "Then the fire, after rejoicing at the dried logs placed upon it, began to ascend and drive out the air from the spaces between the logs, twining itself in

Terms recounting the growing flame refer particularly to the fire's upward movement, its outflow, and ascent by means of repetition and amplification: *elevarsi; spirare fuori; cacciato fuori; discaccia*.

On the phonetic level, the crackling and sparkling of the flame, and its excitement are rendered with the alliteration of *r* and *l*: “fori di rilucenti e rutilanti fiammelle;” and the assonance: “di scoppi e di scentillanti sfavillamenti.” Similarly, in fable 8, the fire falls toward the candle a “gran desiderio,” which is the stirring to devour it with “somma voracità e ingordigia.”

Le fiamme, già uno me<se> durato nella fornace de' bicchieri e veduto a sé avvicinarsi una candela 'n un bello e lustrante candelieri, con gran desiderio si forzavano accostarsi a quella. Infra le quali una la<s>ciato il suo naturale corso e tiratasi d'entro a uno voto stizzo, dove si pasceva, e uscita da l'opposito, fori d'una piccola fessura, alla candela che vicina l'era, si gittò, e con somma golosità e ingordigia quella divorando, quasi al fine condusse; e volendo riparare al prolungamento della sua vita, indarno tentò tornare alla fornace, donde partita s'era, perché fu costretta morire e mancare insieme colla candela; onde al fine col pianto e pentimento in fastidioso fumo si convertì, lascian<do> tutte le sorelle in isplendevole e lunga vita e bellezza (*fab. 8.*)¹⁰⁰

among them in sportive and joyous progress, and having commenced to blow through the spaces between the logs out of which it had made delightful windows for itself, and to emit gleaming and shining flames, it suddenly dispels the murky darkness of the closed-in kitchen, and the flames having already increased began to play joyfully with the air that surrounded them, and singing with gentle murmur they created a sweet sound [...].” Trans. Richter, *Notebooks*, 270.

¹⁰⁰ Leonardo da Vinci, Cod. Atl., fol. 67r.b; *Scritti letterari*, Marinoni, ed., n. 20. “The flames had already burned for a month in the furnace of a glasswork when they saw a candle approach in a beautiful and shining candlestick. With keen desire they strove to reach it. One of the flames left its natural course and leapt into a hollow brand, on which it fed. Passing through a small hole on the other end, the flame leapt onto the nearby candle, which is devoured with great gluttony and voracity until it had nearly consumed it. Then, seeking to prolog its life, it attempted in vain to return to the furnace from which it had come. For it was forced to perish and pass away together with the candle. So finally, with crying and contrition, it changed into smelly smoke, and left all its sister flames behind in long life and splendid beauty.” Trans. Marsh, *Renaissance Fables*, 291. Leonardo on the same folio writes down what seems to be different versions of the fable on the fire. In the body of the dissertation, I put the version mentioned in all the critical editions of Da Vinci's fables. Here, I record a more condensed and defined version, for which I believe it should be the definitive: “La fiamma che da una fornace, dove poteva vivere a lungo ma ignorata, vuole, lasciato il suo naturale corso, brillare su una candela e, consumatala, si spegne.” The fire appears also in

A literary and cultural reference for Leonardo's fire is undoubtedly Cecco d'Ascoli's *L'Acerba*. In book III, at *Capitulum tercium de quastionibus naturalibus circa ignem convertit se ad alia*, Cecco talks precisely about the nature of fire, and expands on the faculties which make water and humans capable of destroying it. Leonardo uses this passage to build his allegory that condemns the fire's behavior:

Perché çengota la fiamma nel stiço,
e perché l'omo subito l'amorta?
È cosa occulta o natural viço?
Ventusità reclusa ch'è nel legno
e l'umido che segho <h>on' ora porta
move la fiamma sì che fa tal segno.¹⁰¹

The fire's power to regenerate, its presumption and gluttony are similarly inspired by Pliny's description recorded in Landino under the title *Miracoli di fuoco solo*, in which the classical author refers to fire's productive condition and voraciousness:

Sendo la natura di questo elemento feconda informa che se medesimo partorisce e con piccole faville cresce: che è da stimare che sia in tanti luoghi dove arde nella terra: e quelle e quella natura che sì ingorda voracità in tutto el mondo riempie senza suo danno? [...] E certamente grandissimo miracolo che non sia stato qualche dì nel quale ogni chosa sia arso.¹⁰²

fable 45, where the same scene is recounted in two sentences: "Il lume è foco ingordo sopra la candela. Quella consumando sé consuma." Finally, in fables 4 and 31, the fire burns the wings of the butterfly, which is attracted to the beauty of his light, and in fable 44 the fire pushes the water up into the sky.

¹⁰¹ Cecco d'Ascoli, *L'Acerba*, 293.

¹⁰² Pliny The Elder, *Historia naturale di C. Plinio secondo tradotta di lingua latina in fiorentina per Christophoro Landino fiorentino*, Inc 325357, 1476, II, 110. I also include the citation from the classic text: "Praeterea quum sit huius unius elementi ratio fecundam seque ipsa pariat, et minimis crescat scintillis, quid fore putandum est in tot rogis terrae? Quae est illa natura, quae voracitatem in toto mundo avidissimam sine damno sui pascit? [...] Excedit profecto omnia miracula ullum diem fuisse, quo non cuncta conflagrarent." Plin., *Nat. Hist.*, CXI, 311.

However, Leonardo's characterization partly detaches from fire depictions found in his literary sources. Leonardo's fire has a duplex personality, as it is clear from the contrast between the joyful and fierce flame in fable 26 and its tragic death in fable 48. His study of fire's verbal and visual properties in empirical-scientific, as well as in literary-artistic fields, allows him to take on flames' changing behaviors in the face of various circumstances.

Leonardo starts his investigation of natural elements from collections of words, and links them to visual references. In this way, he defines a synthetic idea made of a set of concepts beneath the fire-flames and water-air characters. Then, thanks to the analysis of literary sources on the same topics, Leonardo develops this set of concepts (such as *grandezza* - *gran*; *desiderare* - *desiderio*; *infiammare* - *fiamme* - *fiammelle*) into complex narratives in the form of fables, so that we witness his gradual understanding and faithful multi-sided representation of these natural phenomena.

Correspondences between the list of words and images and Leonardo's literary writings and scientific studies are not confined to the sphere of natural elements. They also extend to daily life subjects pertaining to the facetious and burlesque, which remind us of the caricatures found on the incipit of Codex Trivulzianus and the following anti-Petrarchan triplet. This is expressed in the coincidence of meaning of the terms *affrittione* and *affritto* on fol. 17v from the Codex Trivulzianus and in rebus 99: "ora sono affritto" ('now I am afflicted'). The rebus is composed of an hourglass for *ora* (hour), a fife player for *sono* (sound), the letter *a*, and a pan on the fire. Mockingly, Leonardo puns on the verbs *friggere* ('to fry') and *affriggere* ('to afflict').

On folio 14r we find another list of words to be analyzed in this context:

Catolici / plecipue / .anuali / dubitare / veneratione / el quale / etternalmente / tenporalmente / .amirando / esspersa / dispersa / grioriarsi / tramesore / trasgressore [...] redentione / destinta / virginità / creare / falsità [...] santificatione / beatitudine / inventione / obrevione / repugnare / volubile / origine / originale / sensualità / obediante / ecelso / intelligente / concupiscentia / ricettare / imperversità / contraversia / recognoscere / conclusione / rebelione / massificare.¹⁰³

These terms arguably belong to a semantic field referring to religion, which is defined using ambiguous words and imbued with sarcasm. The few rebuses referring to religion are dominated by a similarly playful tone. Leonardo's priest is, in fact, a satirical icon: a head in profile, with his bald patch, a hooked nose, and deep-set eyes: a real caricature. Curiously, priests are the main protagonists of Leonardo's satirical and obscene texts entitled *facetiae*—meaning witty jokes. Actually, two of them illustrate prurient scenes referring precisely to priests and friars dealing with the fire (of lust) and the (holy) water. In fact, *facetia* 7 stages a sexual intercourse between a priest and a nun based on a metaphor related to the burning of the priest's candle: "pregò quella che 'n cortesia li dovessi un poco accendere quella candela."¹⁰⁴ Then, in *facetia* 8 a priest ruins

¹⁰³ Leonardo da Vinci, Cod. Triv., fol. 14r. "Catholics / principals / annuals / to doubt / veneration / which (?) / eternally / temporally / to be admitted / give out / dispersed / to boast of / *tramesore* / transgressor [...] redemption / distinct / virginity / to create / falsity [...] sanctification / blessedness / finding or discovery / forgetfulness / to resist / voluble / origin / original / sensuality / obedient / sublime or God / intelligent, full of understanding / concupiscence / to receive / to grow furious / controversy / to recognize / conclusion / rebellion / to make massive." Transl. Stites, *The Sublimations of Leonardo da Vinci*, cat. 154.

¹⁰⁴ Here the entire transcription of the *facetia*: "Una lavava i panni e pel freddo aveva i piedi molto rossi, e, passandole appresso, uno prete domandò con ammirazione donde tale roschezza dirivassi; al quale la femmina subito rispuose che tale effetto accadeva, perché ella aveva sotto il foco. Allora il prete mise mano a quello membro, che lo fece essere più prete che monaca, e, a quella accostatosi, con dolce e sommessa voce pregò quella che 'n cortesia li dovessi un poco accendere quella candela." Leonardo da Vinci, Cod. Atl. 119r.a; *Scritti letterari*, Marinoni, ed., 140, *facetia* n. 7.

some paintings by blessing them with his holy water, so that the artist avenges himself by dousing the priest with a bucket of water.¹⁰⁵

The words and images that Leonardo collected are related to imaginative and semantic fields deduced from his studies of Latin and Italian grammar and artistic and engineering devices, as well as scientific and natural observations. Indeed, many of the words and images that we find in his collections recur frequently in more complex narratives—particularly, in his fables and other literary writings. Hence, Leonardo's combination of texts and images is arguably the outcome of a careful study of linguistic, figurative, and scientific terms toward his creation of a unique and identifiable language. Furthermore, Leonardo's methodological approach has a practical application that serves as an investigation of nature and the world in all its different forms, as reflected in the analysis of subjects and meanings from his catalogues of words and images.

¹⁰⁵ “Andando un prete per la sua parrocchia il sabato santo, dando, com'è usanza, l'acqua benedetta per le case, capitò nella stanza d'un pittore, dove spargendo essa acqua sopra alcuna sua pittura, esso pittore, voltosi indiritto alquanto scruciato, disse, perché facessi tale spargimento sopra le sue pitture. Allora il prete disse essere così usanza, e ch'era suo debito il fare così, e che faceva bene, e chi fa bene debbe aspettare bene e meglio, che così promettea Dio, e che d'ogni bene, che si faceva in terra, se n'arebbe di sopra per ogni un cento. Allora il pittore, aspettato ch'elli uscissi fori, se li fece di sopra alla finestra, e gittò un gran secchione d'acqua addosso a esso prete, dicendo: 'Ecco che di sopra ti viene per ogni un cento, come tu dicesti che accadrebbe nel bene, che mi facevi colla tua acqua santa colla quale m'hai guasto mezze le mie pitture.' ” Leonardo da Vinci, Cod Atl. 119r.a; *Scritti letterari*, Marinoni, ed., 140, *facetia* n. 8.

1.2. Scientific Didactic and Fable Books

1.2.1. Plinio

The combination of captivating satirical drawings and the list of 5 volumes of his property on fol. 2r of the Codex Trivulzianus, provides us with a summary of Leonardo's efforts to create a language of images and words.¹⁰⁶ The archetypes for this peculiar language are to be found exactly in his lists of books. The primitive list from the Trivulzianus is, in fact, accompanied by even more relevant documents on Leonardo's books that testify to his dense visual and textual culture.¹⁰⁷ By means of collating these documents, we reach a total of 123 books, which the artist carefully recorded since his early years.¹⁰⁸

¹⁰⁶ At the time, Leonardo was at the court of Ludovico il Moro in Milan, where he moved in 1484. From then on—Leonardo is already 38—he decides to become a writer. Cf. Carlo Dionisotti, "Leonardo uomo di lettere," *Italia medioevale e umanistica* 5 (1962): 198-202, 183-216; Vecce, *Leonardo*, 360; Fabio Frosini, *Nello studio di Leonardo*, in *La mente di Leonardo. Nel laboratorio del genio universale*, Paolo Galluzzi, ed. (Florence: Giunti, 2006), 113.

¹⁰⁷ See my discussion on the list of words in the Codex Trivulzianus in paragraph 1.1.1. "Libro di mia vocaboli," in this chapter.

¹⁰⁸ Cf. Descendre, *La biblioteca di Leonardo*, 592-95. On Leonardo's *biblioteca* see also: Gilberto Govi, *Saggio delle Opere di Leonardo da Vinci* (Milan: Ricordi, 1872); Girolamo d'Adda, *Leonardo da Vinci e la sua libreria. Note di un bibliofilo* (Milan: Bernardoni, 1873); Pierre Maurice Marie Duhem, *Etudes sur Léonard de Vinci. Ceux qu'il a lu et ceux qui l'ont lu* (Paris: Hermann, 1906-13); Solmi, *Le fonti dei manoscritti di Leonardo*, and *Nuovi contributi alle fonti dei manoscritti di Leonardo*, in *Scritti Vinciani*, Solmi, ed., 1-344, 345-405; Marinoni, *Gli appunti grammaticali*; Elmer Belt, *Leonardo da Vinci's Library* (Book Club of California: San Francisco, 1949); Leonardo da Vinci, *Scritti letterari*, Marinoni, ed.; Brizio, *Scritti Scelti*; Eugenio Garin, *Il problema delle fonti del pensiero di Leonardo*, in *La cultura filosofica del Rinascimento italiano* (Sansoni: Florence, 1961): 388-401; Eugenio Garin, "La biblioteca di Leonardo," *Rivista critica di storia della filosofia* 26 (1971): 331-32; Ladislao Reti, "The Two Unpublished Manuscripts of Leonardo da Vinci in the Biblioteca Nacional of Madrid," *The Burlingtone Magazine*, 110 (1968): 10-22, 81-89; Ladislao Reti, *The Library of Leonardo da Vinci* (Zeitlin & Verbrugge: Los Angeles, 1972); Leonardo da Vinci, *I Codici di Madrid*, Reti, ed., 91-108; Carlo Maccagni, *Riconsiderando il problema delle fonti di Leonardo. L'elenco di libri ai fogli 2 verso - 3 recto del Codice 8936 della Biblioteca Nacional di Madrid* (1970), in

If in the late 1480s Leonardo owned probably only 5 books, in 1495-97 he already compiled a list of 40 volumes on folio 559r of the Codex Atlanticus. In between 1503 and 1504, his book catalogues reached an outstanding total of 116 entries (Cod. MaII, fols. 2v-3r). Leonardo's continuous commitment to collecting books is very unusual for an artist considering himself as *omo senza lettere*.¹⁰⁹ According to critics, this expression refers to Leonardo's ignorance of Latin, which explains his statements in favor of painting as opposed to literature that appear in his writings after 1490.¹¹⁰ Leonardo duly took part in the *Paragone* of the arts discussion by heavily criticizing *litterati* people. In his *Libro di pittura*, humanistic science is

Leonardo da Vinci letto e commentato, Paolo Galluzzi, ed. (Giunti Barbèra: Florence, 1974), 283-308; Nando de Toni, "Libri, codici ed autori elencati negli scritti di Leonardo," in *Notiziario vinciano* 1 (1977): 22-51; "Ancora sui 'libri' di Leonardo," in *Notiziario vinciano*, 2 (1977): 3-64; 4 (1977): 3-62; 6 (1978): 3-70; 8 (1978): 3-68; Carlo Pedretti, *The Literary Works of Leonardo da Vinci. A Commentary to Jean Paul Richter's Edition* (Oxford University Press: Oxford, 1977); Augusto Marinoni, "La biblioteca di Leonardo," *Raccolta Vinciana* 22 (1987): 291-342; Leonardo da Vinci, *Scritti*, Vecce ed., 157-59, 345-405; Vecce, *Leonardo*, 157-59, 232-38; Frosini, *Nello studio di Leonardo*, in *La mente di Leonardo. Nel laboratorio del genio universale*, Galluzzi, ed. (Giunti: Florence, 2006), 112-49; Edoardo Villata, *La biblioteca, il tempo e gli amici di Leonardo. Disegni dal Codice Atlantico* (De Agostini: Novara, 2009); Martin Kemp and Manya Pagiavla, "Inventory, The Master's Shelf, Leonardo's Books Lists," *Cabinet* 52 (2013-14): 15-19; Pietro Cesare Marani, and Marco Versiero, *La biblioteca di Leonardo. Appunti e letture di un artista nella Milano del Rinascimento*, (Milan: Castello Sforzesco, 2015); Vecce, *La biblioteca perduta*.

¹⁰⁹ Leonardo defines himself as *omo senza lettere* in *Proemio* 6, Leonardo da Vinci, *Scritti Letterari*, Marinoni ed., 48. See also: Giuseppina Fumagalli, *Leonardo "omo senza lettere"* (Sansoni: Florence, 1939); Augusto Marinoni, "Per una nuova edizione di tutti gli scritti di Leonardo," in *Atti del convegno di Studi Vinciani indetto dalla Unione Regionale delle Provincie Toscane e dalle Università di Firenze, Pisa e Siena* (Firenze-Pisa-Siena, 15-18 gennaio 1953), in *Accademia Toscana di scienze e lettere "La Colombaria"* 3 (1954): 97; Carlo Vecce, *Marinoni e le parole di Leonardo. Dagli appunti grammaticali e lessicali ai rebus*, in "Hostinato rigore," Marani, ed., 100.

¹¹⁰ These texts reach their definitive version in the Codex A, and then constitute the first part of Leonardo's *Libro di pittura*, entitled *Paragone delle arti*. See Leonardo da Vinci, *Libro di Pittura. Codice Urbinate lat. 1270 nella Biblioteca Apostolica Vaticana*, Carlo Pedretti and Carlo Vecce, eds. (Giunti: Florence, 1995), 134, 150-58; Carlo Vecce, *Leonardo e il 'paragone' della natura*, in *Leonardo da Vinci on Nature: Knowledge and Representation*, Frosini and Nova, eds., 183.

defined just as *invenzione e misura*¹¹¹ and, therefore, as incapable to reflect the real workings of nature. According to him, the higher seat in the hierarchy of the arts is conferred to painting precisely because it is the only art capable of representing *l'opere di natura*.¹¹²

However, Leonardo's library has all the characteristics of a typical early modern humanistic collection and it displays his intention to undertake a literary project.¹¹³ Among Leonardo's books, we have a section on burlesque poetry, represented by the work of Luigi Pulci and Burchiello, and mythical texts, such as Virgil's *Metamorphosis*, and the Bible. In addition, the large number of volumes about military engineering and architecture (Mariano di Taccola, Francesco di Giorgio, Roberto Valturio, and Leon Battista Alberti) shows that the collection certainly had a practical function as well. Furthermore, the appearance of Leonardo's records suggests the presence of a reader, as they are orderly and beautifully placed within the space of the page, in the manner of a classical book index (Figure 1-15). Leonardo's lists of books are public displays, which either aim to make up for Leonardo's lack of humanistic training, or even to assert that he did indeed have this kind of education.

One of the most interesting sections of his library that can be identified as a crucial model for Leonardo's writing and drawing technique is the scientific-didactic corpus. This section is

¹¹¹ Leonardo da Vinci, *Libro di Pittura*, 158.

¹¹² *Ibid.*, 182.

¹¹³ Leonardo's attempt to write a book is recorded on a note on fol. 15v from the Manuscript C: "A dì 23 d'aprile 1490 cominciai questo libro e ricominciai il cavallo." Over the years, Leonardo collects various grammars, books of rhetoric, vocabularies, and literary texts so that he turns his library "da 'pollaio' in uno zoo con molte 'giraffe'" ('from a *henhouse* to a zoo full of *giraffs*'), in Carlo Dionisotti's words. See Dionisotti, "Leonardo uomo di lettere," 183-216.

composed of the *Tractato de le più maravigliose cosse e più notabili che si trovano in le parte del mondo* by Sir John Mandeville (Milan 1480), the *Cronica de tutto il mondo vulgare* (Venice 1491), Cecco d'Ascoli's *L'Acerba* (both originally published in Venice 1476), the anonymous *Fiore di Virtù* (Venice 1477) and, most importantly, the vernacular edition of Pliny's encyclopedia.

The *Tractato de le più maravigliose cosse* is recorded on Leonardo's Codex Atlanticus list under the name "giovan dimandivilla." This travel memoir had already been circulated in 1357-71; and it was translated in many languages and illustrated amazing sights, creatures and customs recorded from all around the world. Similarly, written by the Augustinian monk Iacopo Foresti and published in 1483 in Venice, the *Cronica de tutto il mondo vulgare* ("clonica del mondo," as recorded on Madrid II), presented a universal history of curious and relevant events of all times and nations to be handed down from one generation to another. The books' mixture of mythical and historical figures, their scientific treatment and unreliable and fantastical nature surely influenced Leonardo's short stories and sequential visual representations, such as *Il sito di Venere* ('Venus' site'), *Il gigante* ('The giant'), *Al Diodario di Soria* ('To Diodario from Soria,' deputy of the sacred sultan of Babylon), *Il mostro marino* ('The sea monster') and *I diluvi* (the deluge series). For instance, folios 29-31 from Mandeville's *Tractato* and folio xi from the *Cronica* describe the beauty of the island of Cyprus with words recalling Leonardo's account of the reign of Venus. In addition, the climactic partition and the calculation of distances and heights which characterize Leonardo's depiction of mount Tauro contain both the ostentatious

scientific exactitude and fabulous atmosphere of Eastern travels reflected in these treatises' descriptions of islands (i.e. *Tractato*, fol. 20; *Cronica*, fols. xiii, xxvi, xxxi, xxxviii), mountains (*Tractato*, fol. 116; *Cronica*, mount Tauro: fols. viii, xi; other mounts: xxiii, xxvi, xxix, xxxv) and giants (*Tractato*, fol. 215; *Cronica*, fols. xi, xiv, xxiii-xxvi).¹¹⁴

Cecco d'Ascoli's *L'Acerba* is a typical work of medieval encyclopaedism and natural philosophy that features in both the Atlanticus and Madrid II lists as "ciecho d'asscholi." It certainly inspired emblematic representations of the four elements and of some animals which appear in Da Vinci's fables and bestiary. As documented in the previous chapter, Cecco's treatment of water and fire is at the basis of Leonardo's fables 1, 5 and 34. In addition, *L'Acerba*'s representations of stone and snow appear in four of Leonardo's fables (respectively, fables 38, 39, and 15, 49). The same is true for Cecco's descriptions of animals. For instance, his chapter *De la natura dell'aquila* shapes Leonardo's characterization of the eagle in his bestiary and in the fable of the eagle and the owl:

Cecco d'Ascoli.

Ov'è il suo nido non li sta apresso
nissuno augello se non vuol morire
e da sue fere brache esser depresso.
De sua rapina sempre lassa parte:
animal picciol non vuol mai ferire;
volgendo lor temer, tosto se parte.¹¹⁵

Leonardo.

Nessuno uccel, che non vole morire, non s'accosti
al suo nido. Gli animali forte la temano, ma essa a
lor non noce: sempre lascia rimanente della sua
preda (*best.* 36.)¹¹⁶

¹¹⁴ The *I diluvi* is a corpus of drawings on deluges and storms preserved at the Windsor Collection in Berkshire, UK (folios RL 12376-85, RL 12394, RL 12400, RL 12412-16 from the Windsor Collection).

¹¹⁵ Cecco d'Ascoli, *L'Acerba* (Venice: maestro Philipo de Piero, 1476). Inc. 203, BAMBros, Milan (ripr. Veneranda Biblioteca Ambrosiana): 3, 13-18.

¹¹⁶ Leonardo da Vinci, Ms. H, fol. 12v; *Scritti letterari*, Marinoni, ed., n. 36.

Volendo l'aquila schernire il gufo, rimase
coll'alie impaniate, e fu dall'omo presa e morta
(*fab.* 18.)¹¹⁷

Leonardo's eagle has also a significant place in Leonardo's artistic production: in Manuscript B, Leonardo studies the bird's morphology in order to create a flying machine (fols. 73v, 74r, 75r), and the eagle is the main subject of Leonardo's allegorical drawing of the *navis ecclesiae* from the Windsor Collection (RL 12496, Figure 1-16).¹¹⁸

The anonymous *Fiore di Virtù* (enlisted as “fiore” or “fior di virtù” in the same lists) is a very popular fourteenth century booklet composed of thirty-five chapters on animal qualities which could also have inspired Leonardo's fables and his bestiary. In the *Fiore*, each animal represents either a vice or a virtue; particular attention is given to different types of birds. Curiously, one of the most productive subjects of Leonardo's fables and bestiary are, accordingly, birds—such as the eagle (*aquila*, on fol. 25v in *Fiore di virtù*), the goldfinch (*calandrino*, fol. 4r), and the falcon (*falcone*, fol. 52r). Especially significant is the representation of the goldfinch, which in *Fiore di Virtù* represents the virtue of love. According to medieval tales the bird could predict the healing of the sick by looking firmly into their eyes. Leonardo transcribes the passage as it appears in *Fiore di Virtù* on folio 5r from the Manuscript H:

¹¹⁷ Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti letterari*, Marinoni, ed., n. 24. “Wishing to mock the owl, the eagle got its wings stuck in bird-lime, and was captured and killed by man.” Transl. Marsh, *Renaissance Fables*, 287.

¹¹⁸ For a discussion of the allegorical drawing, see Ladislao Reti, “Non si volta chi a stella è fisso: Le imprese di Leonardo da Vinci,” *Bibliothèque d'Humanisme et Renaissance* 21.1 (1959): 7-54, 45-48; Martin Kemp, “Navis Ecclesiae: una metafora ambrosiana nell'allegoria leonardesca del lupo nautico e dell'aquila imperiosa,” in *Lezioni dell'occhio: Leonardo da Vinci discepolo dell'esperienza*, Martin Kemp, ed., (Milan: Vita e Pensiero, 2004), 117-131.

Fiore di Virtù.

Puose asempiare e apropiare la virtù d'amore a uno oselo che se chiama calandrino che ha tale proprieta secondo che scrive Alberto Magno, e Plinio e Bartholomeo de la proprietà de li oseli che se le portato di nanci a uno infermo se l'infermo deve morire el ditto oselo rivolge la testa e non lo vol mai guardare e se lo infermo deve scampare: si lo guarda fermo e fiso e ogni sua malatia si le tole da dosso. Così fa la virtù d'amore: che la non guarda mai alcun vizio e fuge sempre ogni cosa vile e trista e demora sempre volentieri in cose honeste e virtuose, e repatria e pratica sempre in ciascun cuore gentile come fano li oseli in le verdure dele selve e de li arbori fioriti e Verdi. E dimostra più la sua forza el valor de la sua virtù in la adversità che in la prosperità, sì come fa la lume che posta in la oscurità e tenebra illumine e resplende pui forte che in la luce.¹¹⁹

Leonardo.

Amore di virtù.

Calandrino è uno uccello, il quale si dice che, essendo esso portato dinanzi a uno infermo, che se 'l detto infermo debbe morire, questo Uccello li volta la testa per lo contrario e mai lo riguarda; e, se esso infermo debbe iscampare, questo uccello mai l'abbandona di vista, anzi è causa di levarli ogni malattia.

Similmente l'amore di virtù non guarda mai cosa vile nè trista, anzi dimora sempre in cose oneste e virtuose, e ripatria in e cor gentile, a similitudine degli uccelli nelle Verdi selve sopra i fioriti rami. E si dimostra più esso amore nelle avversità che nelle prosperità, facendo come lume, che più risplende dove truova più tenebroso sito (*best.* 1).¹²⁰

Finally, Leonardo draws the goldfinch in a round cage in different versions on folios 190v and 521r from the Codex Atlanticus, accompanied by the motto: “I pensieri si voltano alla speranza” (‘Thoughts turn towards hope’) (Figure 1-17).¹²¹ This is another case illustrating how Leonardo translates his library sources both in written and visual forms through an unceasing process of re-writing.

To some extent, each one of his scientific didactic books influenced Leonardo's development of visual and textual narratives. However, Pliny's *Natural History* certainly played

¹¹⁹ *Fiore di Virtù* (Venice: Adam de Ambergan, 1472). Inc E63.122, BN, Florence (ripr. USTC), I, 4-5.

¹²⁰ Leonardo da Vinci, Ms. H, fol. 5r; *Scritti letterari*, Marinoni ed., n. 1.

¹²¹ The emblem of the goldfinch may refer to the relationship between Leonardo and Charles d'Amboise, to signify the positive influence of the French dominion in Lombardy in 1508, when the folio is dated. Cf. Marco Versiero, *Leonardo, la politica, le allegorie. Disegni di Leonardo dal Codice Atlantico. Codex Atlanticus 4* (Novara: De Agostini, 2010), 112-14; Vecce and Cirnigliaro, *Leonardo: favole e facezie*, 42, 51.

a leading role in Leonardo's library on various levels, which can only be understood with a close analysis of early modern editions of this work.

Initially, "plinio" is recorded in the early list of the Codex Trivulzianus from the late 1480s, representing the library's first hard core.¹²² It then appears also in the Codex Atlanticus and Madrid II lists under the same label. It seems that Leonardo is referring each time to the same book of Pliny—which he particularly prized, as it always featured at the top of his library lists. Although Leonardo may not have been aware of it, his thoughts must have been shaped by Pliny's poetic vision of nature, often accompanied by emblematic illustrations that are so close to some of the artist's visual attempts.

Augusto Marinoni suggested that Leonardo read the book in the vernacular edition by Christoforo Landino—in Italian, *Historia Naturale*—firstly published in Venice in 1476, and available in beautifully illustrated copies. This volume offered a perfect model to reorganize scientific observations and literary skills in a carefully crafted formulaic structure. Furthermore, it showed encyclopedic knowledge and very specific descriptions of peculiar features of animals, humans, and places which arguably served Leonardo's creative and scientific projects.

As Sarah McHam claims, the original Latin volume of the *Natural History* appeared in Venice in 1469. Being one of the first books printed, it was at the center of a dynamic exchange

¹²² Later, the same label appears also on Madrid II and Atlanticus lists of books. The entire title of the volume is *Historia Naturale tradocta di lingua latina in fiorentino per C. Landino* (Venice, 1476, 1481, 1489). Cf. Marinoni, *Appendice*, in Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 248. See also Vecce, *Appendice*, in Leonardo da Vinci, *Scritti*, Vecce, ed., 255; Descendre, "La biblioteca di Leonardo," 592-95.

of manuscripts, as confirmed in letters and documents that record loans and contracts with scribes and illuminators to produce multiple copies.¹²³ The extreme popularity of the text, the unique source of material on nature and the world that it provided, along with its terrific apparatus of illustrations, were everything Leonardo could have ever envisioned for launching its word-and-image investigations of nature.

Because of its encyclopedic format, it is unlikely that Leonardo—and the same can be said for anyone who approaches such a bulk—read the entire book.¹²⁴ Therefore, it is important to pinpoint what the artist could actually have read (and seen) in Pliny's early modern editions. We shall start our investigation by considering the editions of Cristoforo Landino's translation of Pliny's *Natural History* that were published before the late 1480s, when Leonardo originally recorded the book in his manuscripts. These are the 1476, 1481, and 1489 editions, as Marinoni earlier suggested.¹²⁵

The idea to translate Pliny into vernacular was of Girolamo Strozzi's, who commissioned the work to his Florentine fellow Cristoforo Landino on behalf of the firms of their cousins, Filippo and Lorenzo Strozzi. It was printed, 1,025 copies to be exact, with the aid of Giambattista Ridolfi under the firm of Nicolas Jenson of Venice. These copies were sent to

¹²³ Most readers consulted the text for specific information rather than to read it into its entirety, or even analyze it. Cf. McHam, *Pliny and the Artistic Culture of the Italian Renaissance*, 148.

¹²⁴ *Ibid.*, 9.

¹²⁵ Leonardo da Vinci, *Scritti Letterari*, ed. Marinoni, 248.

booksellers all over Italy, as well as to Bruges and London, where the family had important business and trade collections.¹²⁶

The 1476 Strozzi family's hand-printed copy of Landino's translation (Arch. G.b.6, Bodleian Library, Oxford) is a significant starting sample for my case study. The rarely beautiful volume was at the time so popular that it is not surprising if Leonardo traveled to the Strozzi house in order to see it.¹²⁷ The Strozzi frontispiece shows the preface text surrounded by an enchanting frame made of sparkling twines of plants, flowers, fruits, and small emblems depicting animal and human activities that could have surely captured Leonardo's eye. This frontispiece did not only provide an artful device to contemplate, but also a perfect example of word and image combinations made of narratives, accompanied by emblematic representations that stand for those narratives.

In an effort to find the reference he was looking for, Leonardo might have gone through the Plinian index multiple times so that few names and themes of the chapters must have stayed in his mind, without him even being aware of it. At the same time, Pliny's neverending lists of chapters and paragraphs on the entire human knowledge possibly initiated Leonardo's obsession with lists. For instance, the index of *Historia Naturale's* book II in the Strozzi family's edition

¹²⁶ Two manuscripts of this edition (named, respectively, hI3 and hI2) are preserved at the Biblioteca del Escorial, and were probably produced during the 1474 and 1475. Cf. McHam, *Pliny and the Artistic Culture of the Italian Renaissance*, 149-51.

¹²⁷ I discussed this issue with Professor McHam on March 1, 2017, and she confirmed the possibility that Leonardo saw the Strozzi family's copy of Landino.

shows few formal and structural elements that could have informed Leonardo's index for his book on water (Codex Leicester, fol. 15v):

| Del mondo e delle cose celeste terrestre e aeree | Divisione del libro |
|---------------------------------------------------------|---------------------------------------------------------------|
| Se 'l mondo è finito e se è uno. C.i. | Libro p° delle acque in se. |
| Della forma sua. C.ii. | libro 2° del mare. |
| Del moto suo. C.iii. | libro 3° delle uene. |
| Perchè è chiamato mondo C.iiii. | <l>ibro 4° de' fiumi. |
| De' quattro elementi. C.v. | libro 5° delle nature de' fossi. |
| [...] Miracoli del mare. Ca.ci. | libro 6 delli obietti. |
| Che potentia habbia la luna in terra e in mare. Ca.cii. | libro 7 delle ghiaje. |
| La potentia del sole e perchè el mare è salso. Ca.ciii. | <l>ibro 8° della superfite dell'acqua. |
| Item della natura della luna. Ca.ciiii. | libro 9 delle cose che in quella son messe. |
| Dove el mare è altissimo. Ca.cv. | libro 10° de' ripari de' fiumi. |
| Miracoli d'acque, fonti, fiumi. Miracoli di | <l>ibro 11° delli condotti. |
| fuochi e d'acque congiunti e della malta. Ca.cvi. | libro 12 de' canali. |
| [...] Miracoli di fuocho di per sè. Ca.cix. | <l>ibro 13 <d>elli strumenti volti dall'acqua. |
| Misura di tutta la terra. Ca.cx. | <l>ibro 14 del far montare l'acque. |
| Ragione harmonica del mondo. Ca.cxi. | <l>ibro 15 dell<e> cose consummate dall'acque. ¹²⁸ |

Both of the lists are structured per topics, and discuss waters' properties and features, delving into multiple details of the subject investigated. However, Landino's index is substantial: it is composed of 111 chapters that consider the world in its entirety (*Se 'l mondo...*) and the natural elements which are part of it—water comprised—, to then conclude in a universal perspective (*Ragione harmonica del mondo*). Conversely, Leonardo's index is composed of just 15 entries. It immediately shows his selectivity when confronted with Plinian material: the book will only discuss water. Apparently, Leonardo's list also has a more clear structure, which concentrates, first, on general concepts (*acque in se*) and then, on details and practical matters (*cose consummate*).

¹²⁸ Pliny, *Historia Naturale*, I, 17-19; Leonardo da Vinci, Cod. Leic., fol. 15v.

While dealing with Pliny, Leonardo probably lingered on the chapters' initials adorned with floral motifs, and on the most popular passages, often highlighted by visually stimulating scribes' notations. In this respect, an exemplary volume that could have inspired Leonardo is the incunable C.3.d.2, which is preserved at the British Library in London, United Kingdom. It is one of the Landino copies printed by Jansen in mobile body types in 1476. These copies were diffused all over Europe and, therefore, of the kind that Leonardo not just had seen, but most likely owned. In fact, as McHam suggests, Landino's translation was extremely important in the transmission of Pliny's influence because it directly addressed the non-Latinate audience of artists (such as Leonardo).¹²⁹ On folio XXIX of this exemplar, the scribe notes, on the right margin, the words *salamandra* and *vulture*,¹³⁰ in correspondence of the chapters describing these animals. In order to highlight particular sentences in the paragraphs, the scribe also uses four *manicula* and delicate braces (a sort of floral, curly bracket). Certainly attracted to this type of sign—similar to the marks he used in his own manuscripts¹³¹—Leonardo might have focused on the paragraphs where they were concentrated. The fact that in his bestiary he included both salamander and vulture supports the hypothesis that Leonardo had access to this very version of the *Naturalis Historia*.¹³²

¹²⁹ Cf. McHam, *Pliny and the Artistic Culture of the Italian Renaissance*, 149.

¹³⁰ Curiously, Petrarch—or, according to Fiorilla, Boccaccio—highlighted the same animal in his own manuscript of the *Natural History* under the Latin label of *vultur*. Ibid., 67.

¹³¹ Exemplary of Leonardo's scribe-signs are the little crosses that he transcribes at the end of texts to be connected to other ones featured, afterwards, in a distant position (more or less corresponding to asterisk signs). Cf. Vecce and Cirnigliaro, *Favole e facezie*, 26-28.

¹³² Another incunable of 1476, printed in Venice by Jenson, and preserved at the British Library is IC.19693. Less ambitious than the previous ones, it shows golden floral initials and few notes in red pen. At the

One of Landino's exemplary incunable is IB.20198, which is also preserved at the British Library. It was printed in Venice by Filippo di Pietro in 1481, with no illustrations, and shows an innumerable series of scribe annotations. Particularly curious is "nota bene tutto," besides cap. liii of Book II: *Spetie e miracoli di saette*, which reminds us of "Notta ogni cosa," likely written by Francesco Melzi, on the back of fol. 207 from the Codex Atlanticus—one of Leonardo's most beautifully laid out pages of fables and corresponding illustrations. The mention "nota" is repeated throughout the Landino's exemplar. Furthermore, on the back of the incunable, we see a series of calculations that reflect those featured beside Leonardo's fables on fols. 692r and 477v. These little details allow us to locate Leonardo's and his pupils' notes in the context of typical humanistic practices oriented to the marking of texts for different purposes. Marks were used to memorize passages to be reused in other works, to reorganize the material for a possible publication, as well as for ordinary needs with no connection to the text's meaning.

In some cases, scribes also sketched little figures in the margins of books and manuscripts. This happens on incunable IB. 23218: another *Historia Naturale* by Landino found at the British Library and printed by Bartolamio de Zani in 1489.¹³³ At page VIII of this exemplar, we see a delicate sketch of a lion beside the title of cap. XVI, *Leoni*. On the back of the same page, close to the description of poisons in nature, there is a drawing of a sword. This might refer to

Bibliothèque Nationale de France there is an exemplary of the same edition, FRBNF31123563, with floral initials in golden, blue, and red ink.

¹³³ An interesting Landino's edition of a similar kind is the incunable from the British Library: IB.20198.

the passage on an herb that, if eaten, causes the sword to ascend from the body of an animal that was hit (in this case, a deer):

E cerui furono cagione che gl huomini intendessino che una herba chiamata dyctamo ha potential di trarre el ferro della ferita: iperoche quando el cervo saettato da li cacciatori si sente el ferro nella piagha si pasce di questa erba per virtù di quella esce el ferro.¹³⁴

The incunable contains other drawings that are quite significant in respect to our analysis. They represent animals (a dolphin), plants (onions), and natural elements (the sun), synthetizing the meaning of the text to which they refer. Probably inspired by drawings of this kind, Leonardo frequently puts similar small figures beside his text. An exemplary page that uses synthetic images of the same kind is, again, fol. 207r from the Codex Atlanticus. Here, the fables of the citron, the peach, the nut, the fig, and the fig and the elm trees are supplied with emblematic illustrations of corresponding plants.¹³⁵

We do not have to exclude the possibility that Leonardo had access to Latin editions of Pliny as well (which were fifteen at the time).¹³⁶ I am not arguing that the artist read Pliny in Latin, but he could have certainly been influenced by illustrations contained in Latin editions. One of these might certainly be the luxury copy of the 1472 Nicolas Jenson edition that belonged

¹³⁴ IB. 23218, VIII-h.

¹³⁵ See Chapter 2 for a detailed discussion of fables and emblems on fol. 207r from the Codex Atlanticus.

¹³⁶ The Latin *editio princeps* was Johannes de Spira's edition, printed in Venice in 1469, which circulated 100 copies at a very cheap price. The second edition of 300 copies appeared, shortly after, in Rome (Giovanni Andrea Bussi, 1472) at the high cost of eight ducats. This edition was reprinted in Venice, by Nicolas Jenson in the same year, and in 1473 by Sweynheym and Pannartz. After that, other earliest fifteenth century editions were printed, about 300-400 copies, along with various commentaries of the text by scholars such as Ermolao Barbaro. Cf. McHam, *Pliny and the Artistic Culture of the Italian Renaissance*, 147-48.

to Lorenzo de' Medici (the British Library's incunable G. 9382).¹³⁷ Its preface curiously shows a wide range of insects and sea animals (such as the enframed butterflies, flies, sea shells and a crab), and plants (nuts, grapes, and mulberries surrounding Lorenzo de' Medici's coat-of-arms) that are at the basis of many of Leonardo's fables and emblems, and are not previously documented in the Aesopic fable tradition.¹³⁸ Curiously, the preface also includes the illustration of a man seated and painting at an easel, which beautifully summarises the triumph of painting over literature as recorded in Leonardo's *Libro di pittura*.

1.2.2. Isopo

Along with Pliny's encyclopedia, a major source for Leonardo's combination of words and images is certainly that of Aesopic fables. Even though we do not find any trace of the author in the Trivulzianus's records of the late 1480s, the name of Aesop appears four times in Leonardo's lists of books among his possessions. The first mention of Aesop is contained in the Codex Atlanticus list dated at 1495-97, under the annotation of "isopo." As a consequence, we can argue that Leonardo did not possess the book until the end of the 1480s, and assume as *terminus ante quem* its publication the mid 1490s.

¹³⁷ At the British Library there are only three other copies of this edition (IC. 19662, C.2.d.7, and C.2.d.8), which I analyzed as part of my research project. I chose the exemplar G. 9382 because of its very singular illuminated border and because Leonardo could have looked at it at Lorenzo's court.

¹³⁸ Butterflies are the protagonists of fables 25 and 40; flies of fables 12, 17 and 45. The seashell appears in fable 42; and the crab in fable 44. We find nuts in fables 24, 26, 30, 28 and 31; and grapes in fables 12, 43, 45, 46 and 50. Nuts, grapes and mulberries are found in Leonardo's pictographs, such as RL 12692. Finally, mulberries referring to Ludovico il Moro cover the entire ceiling of the Sala delle Asse at Castello Sforzesco in Milan, painted by Leonardo in 1498.

Vecce identified the annotation “isopo” with the vernacular edition of Esopo, *Favole*, by Fazio Caffarelli, published in Cosenza in 1478.¹³⁹ More recently, Descendre preferred another vernacular edition to Caffarelli’s one: *La vita dell’Esopo e le favole del medesimo*, curated by Francesco del Tuppo (Naples, 1485, or L’Aquila, 1493).¹⁴⁰ Both scholars agree that this annotation corresponds to the volume “favole d’isopo,” recorded in the Codex Madrid list, along with two other books: “isopo i<n> lingua franc<i>osa,” and “isopo in versi.” These titles are thought to stand for *Les fables d’Ésope* (published in Lyon in 1480, 1484 and 1487), and the *Aesopus moralisatus* in Latin and Italian verses by Accio Zucco (*Aesopi Fabulae...cum italiaca versione Acii Zuchi per rithmos disposta*, Verona, 1479, etc.).¹⁴¹

The main problem with regard to scholars’ identifications is that they essentially refer to the first printed edition of a work (*editio princeps*) that had previously existed only in manuscript form. With respect to Pliny, scholars agreed on the fact that Leonardo owned the Landino edition, of which we have only three reprints. The case of Aesop generated indeed some more confusion. Apparently, Leonardo had three different editions of the text;¹⁴² each of these

¹³⁹ Cf. Vecce, *Appendice*, in Leonardo da Vinci, *Scritti*, Vecce, ed., 257; Marinoni, *Appendice*, in Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 251.

¹⁴⁰ Cf. Descendre, “La biblioteca di Leonardo,” 592-95.

¹⁴¹ Cf. Vecce, *Appendice*, in Leonardo da Vinci, *Scritti*, Vecce, ed., 258. Marinoni also proposes *Les subtiles fables d’Esopo*, Lyon, 1493, which is not recorded in later attributions. See Marinoni, *Appendice*, in Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 251. In his essay on Leonardo’s library, Descendre adds the 1480’s edition *Fables d’Ésope*, trad. Julien Macho. See Descendre, “La biblioteca di Leonardo,” 592-95.

¹⁴² In the discussion of the Madrid II list, Vecce argues that Leonardo’s interest for the fable tradition brought him to get, in addition to the vernacular translation of the Aesopic fables, an edition of Aesop in Italian verses, and in French. Cf. Vecce, *Due casse di libri*, in *Leonardo*, Vecce, ed., 234.

was printed in various places, and reprinted almost biannually, with additions of fables derived from other traditions.¹⁴³ Furthermore, it is likely that Leonardo owned or had access to Latin editions of Aesop. Even if Leonardo could not read Latin, his lists of words document that he was surely hoping to learn it. Because Latin translations of Aesop were often used on a didactic level to foster Latin learning, we have enough evidence to presume that Leonardo made use of them as well.

In addition to the continuous Latin tradition of prose compilation such as *Romulus*, *Aesopus moralisatus*, and *Anonymus Neveleti*, the beginning of the fifteenth century saw the spread of a wide range of Latin translations as a consequence of the arrival in Europe of the Greek codices of Aesop. Humanists such as Guarino da Verona (c. 1422), Ognibene da Lonigo (c. 1430), and Rinuccio da Castiglione (1440)¹⁴⁴ were devoted to translations from the Greek, while others began to compose original apologues in Latin, mainly in prose. Among them, a dominant model of Aesopic prose was established by Leon Battista Alberti's *Centum apologi* in 1499.¹⁴⁵ Even Leonardo took part in this literary fervor by writing fifty-four fables in vernacular that strikingly innovated the fable tradition. Therefore, apart from the vernacular and French

¹⁴³ The Universal Short Title Catalogue (<https://www.ustc.ac.uk/>) search for the *Aesopus moralisatus* shows, for instance, that the volume was printed in Verona, 1479; Rome, 1483; Naples, 1485 (Del Tuppo); Venice, 1487, 1490, 1491, 1493; Brescia, 1487, 1495; L'Aquila, 1493 (Del Tuppo); Bologna, 1494; Florence, 1496. We have 10 reprints for Accio Zucco's edition and only two for Del Tuppo's.

¹⁴⁴ During my archival research, I could examine Rinuccio da Castiglione's collections of fables at the Bibliothèque Nationale de France, such as inc. FRBNF30406063, *Aesopi fabulae* (Milan: Antonio Zarotto, c.1474), and other copies on USTC. Rinuccio Castiglione's edition is the only one that contains the Aesopic fable of the monkey, the only certain archetypal source of Leonardo's fables.

¹⁴⁵ Cf. Marsh, "Aesop and the Humanistic Apologue," 9-10.

editions of Aesop recorded in his library lists, Leonardo's models could have also been contemporary Latin translations, and the collection of Alberti's apologues. Eventually, it is probable that Leonardo accessed Latin sources of Aesopic fables via oral tradition.¹⁴⁶

Given the complexity and vastness of the Aesopic material in question, I decided to focus on the most recent scholarly attributions of Leonardo's Aesop—Fazio Caffarelli's, Accio Zucco's and Francesco del Tuppo's vernacular translations, and Lyon French editions—to verify resonances of these works in Leonardo's oeuvre. Among the various hypotheses, I was tempted to leave Fazio Caffarelli out of the artist's library. In fact, the volume—which I analyzed in the version preserved at the Biblioteca Corsiniana in Rome, inc. 51A19—presents no illustrations and includes only a few fables that relate to Leonardo's. However, Caffarelli's *Favole* is the only edition to use the term “falcone” (‘falcon’)—which is featured in Leonardo's fables 16 and 19—in the translation of the fable *De columbis et ancipitre*, so that it has to be included as one of Leonardo's library sources.¹⁴⁷

Accio Zucco's *Aesopus moralizatus*—here analysed using the incunable IA.31102 at the British Library (Boninus de Boninis: Brescia, 1487)—contains a series of delicate engravings accompanying its fables that have little to share with Leonardo's visual narratives; nevertheless, they probably inspired his writing. For instance, on folio e.v., the image of a bell tower, birds and

¹⁴⁶ I discussed this hypothesis with Carlo Vecce in the Spring 2016, who suggested that Latin sources could have reached Leonardo despite his limited knowledge of Latin in scholastic and courtly contexts.

¹⁴⁷ A discussion of the use of the falcon in Leonardo's written and textual narratives in relation to his library sources is found in Chapter 2, 2.3.1. *Butterflies*.

luxuriant trees, recall the setting of Leonardo's fable of the nut and the bell tower (Boninus: *De irundine et rustico*, fab. 24; Leonardo: *fab.* 5).¹⁴⁸ Particularly interesting is also the illustration of the fable of the axe and the tree (*De villano luco et securi*, fab. 55) for the theme of the "cutting down," especially dear to the artist. The same fable is also illustrated in Francesco del Tuppo, and presents not only thematic references to Leonardo's work, but also visual similarities with Leonardo's drawings of human activities in natural settings.

The 1485 Francesco del Tuppo's edition *La vita dell'Esopo e le favole del medesimo* (inc. Res M Yc129 at the Bibliothèque Nationale) is even richer in visual and textual references than Accio Zucco's one.¹⁴⁹ For example, *De cane et ove* (fab. 5) is accompanied by an image of an

¹⁴⁸ In my review of Leonardo's library sources, I had the chance to focus on incunable IA.31102 at the British library. There are many copies of Accio Zucco's various editions (most of them are digitalized and available through the USTC catalogue) that still need to be examined. The 1479 edition, preserved both at the BNF and at the Biblithèque of Münchner Stadtbibliothek, also contains an illustration of the same fable (in this case, number 21) where the bell tower is particularly visible. With regard to the illustration of the bell tower page, another relevant element is the moral outlined before the illustration, as a title page: "Se tu fai cosa alcuna guarda il fine / acciò che in le più grave non ruine." Inc. IA.31102, Accio Zucco's *Aesopus moralizatus* (Boninus de Boninis: Brescia, 1487), fol. 32r. The moral belongs to the Aesopic fable of the black kite and the white doves to which the illustration refers. However, Leonardo's fable of the nut, the crow, and the bell tower (*fab.* 5) ends with a sentence that well harmonizes with the aesopic moral: "Allora il muro tardi e indarno pianse la cagione del suo danno, e, in breve aperto, rovinò gran parte delle sue membre." Leonardo da Vinci, Cod. Atl., fol. 187; *Scritti letterari*, Marinoni, ed., n. 62. The fable of the axe and the tree, illustrated in both the 1479 and the 1487 editions, will be widely discussed in the following paragraph (1.2.3).

¹⁴⁹ I chose Del Tuppo's first edition (1485) and not the subsequent one (1493), mainly because the woodcuts in the second edition are of much lower quality in comparison to the previous one. In addition, they are mirrored, meaning that probably the book was printed quickly in lack of the original woodcut matrices, retracing the images from the original illustrations. If we consider the wide availability of Aesop's editions, the care with which Leonardo collected books, and his artist eye, I seriously doubt that he would have gotten the 1493 edition in his library. Furthermore, Leonardo's fables are dated to around 1490s; therefore, it is likely that Leonardo would have reflected on Del Tuppo's edition for sometime before composing them.

animal's reunion, where the monkey and the birds assume a privileged position. Arguably, inspired by the juxtaposition of these two characters in Del Tuppo, Leonardo selects and couples them for the first time in the fable tradition creating a moving tête-à-tête.¹⁵⁰ Finally, particularly striking is the correspondence between the recurring subjects of plant-flowers in a bowing down position characterizing the setting of the majority of the illustrations in Del Tuppo's edition. It might not be a coincidence if the most productive subjects of Leonardo's fables—and some of his visual narratives too—are bending or broken plants.

The visual theme of bending is surely at the core of the 1484 edition of *Les Fables* by Julien des Augustins de Lyon (inc. Y698, from the Bibliothèque Nationale).¹⁵¹ Fable 15 of book 5 (Avianus), recounts the tale of a pine tree that mocks a blackthorn for its ugliness, and then it is cut down with an axe and trimmed as punishment. This volume stands out both for its broad collection of fables—taken from Avianus, Alfonso, and Poggio—and its rich illustrative apparatus. In comparison to the previously mentioned illustrations, these are the only ones in which plants and objects are featured as main protagonists of the fabular space.¹⁵² This is

¹⁵⁰ Leonardo's fabular treatment of the monkey and the bird is discussed in the last paragraph of this chapter (1.2.3).

¹⁵¹ The 1480 edition is missing and, therefore, I could not see it. See USTC (<https://www.ustc.ac.uk/>). I could examine some later editions (such as the 1499 edition, also preserved at the Bibliothèque). However, these editions present a smaller corpus of texts and images, where connections with Leonardo's fables and drawings are hardly found. The book collects fables of Aesop, Avianus and Alfonso, and Poggio Bracciolini's *facetiae*, translated from Latin to French.

¹⁵² A curious recurring subject in Lyon edition is the vineyard (book 5, of Remitius, fable 17, and book 6, of Avianus, fable 5) and again, the motif of the cutting down, performed with different tools (book 6, fables 6 and 15). Both themes are investigated in the illustration of fable 17 from Avianus. Fish and fishing nets, which appear again in the book of Avianus at fable 16 and in the book of Remitius at fable 7, are subjects of

particularly interesting with regard to our discussion because Leonardo's collection of fables primarily focuses on plants and objects. Peculiar of this exemplary is also the presence of small detailed visual marks in the corners of the incunable's pages, which are either copies from the original woodcuts, or drawings illustrating different moments of the fables. For instance, beside the woodcut of the man killing the skunk in front of his house—illustrating fable 19, *Si est de l'homme et de la mustelle*—the scribe reproduces a man with the same headgear, standing in front of the very same house.¹⁵³

What Leonardo draws from the Aesopic volumes that are part of his library, therefore, are not just subjects for his own fables and drawings, but also narrative modes and visual techniques proper of early modern word-and-image reproductions of Aesop. The examination of the editions of Aesop contained in his library shows that Leonardo built his own textual and visual

Leonardo's fables 42 and 48. Then, Leonardo's fable 42 mentions cats and mice, which are at the core of fables 4 and 8 from the book 5, and of fable 23 of book 6. Leonardo's fable 11 and fable 11 from the same book both talk about an ant. In the book of Romulus, we find the fable of the flea, which is the protagonist of Leonardo's fable 36. In addition, Leonardo might have modeled his fable 27 on the fable of the monkey and its cubs (25, *du singe et de ses deux enfans*) found in the book 6 of this edition, as the following paragraph illustrates (cf. 1.2.3). A fable with a similar title is the number 11 from book 6, *du singe et de son fils*, which also portrays the love of a monkey toward its son. In the book of Avianus, we find natural elements very dear to Leonardo, such as the sun (fable 17), and the wind and the earth (fable 16). With regard to objects, fable 9 from the book of Avianus features pots (*fable fait mention des bolles ou des deux pots*) which are also the only protagonist of its illustration. In fable 6 from the book of Remitius we read of a wooden god that is also mentioned in Leonardo's fable 23.

¹⁵³ *Les Fables d'Ésope*, inc. Y698 (Lyon, 1484) 62. Another visual mark of similar nature to that concerning the fable of the skunk is featured at the bottom of page 72. It reproduces a sheep found in the illustration of the fable of the wolf and the sheep (fable 13), on the same page. Finally, on page 79 we have some notes and calculations of the same kind of those found in the previously discussed editions of Pliny.

narratives by focusing on condensed images of an extended narration, and by reworking fabular material concerning the interaction of nature and artifice.

1.2.3. *Leonardo's Aesopic Monkey & Nut Metamorphosis*

Through case studies on illustrations of the interaction between humans and nature in Pliny and Aesop's works and in Leonardo's fables, it is possible to examine his development of visual and textual narratives. In particular, Del Tuppo's *La vita dell'Esopo e le favole del medesimo* (Inc. Res M Yc129) contains a charming woodcut illustrating the Aesopian fable of the axe and tree that most likely piqued Leonardo's curiosity. The fable, as reported in this edition, narrates the tale of an axe that makes a petition to the trees to provide it with a handle. The trees consent to its request, and the man uses the fixed axe to fell them with his strokes. The moral shows that in yielding to the rights of our enemies, we may endanger our own.¹⁵⁴

The main image in the woodcut is a longhaired man who holds his axe and gets ready to hit and chop down a tree's branches (Figure 1-18). On the right, the tree stands opposite to him. It has lost several branches already. One of them is falling on the ground and creates a semicircle with the man's knees that ends at the top of the axe: it underlines the violence and

¹⁵⁴ Here is the text of Del Tuppo's vernacular translation: "La accepta non sapea che fare per possere dapnificare lo bosco né vedea modo delle nocere. Vanne allo bosco et pregalo che la debia armare della stile et lo molectiero la aiuta ad armare essendo duncha armata intro dentro lo bosco et incomenzo ad tagliare in modo che lo boscho se trovo ruinato et lamentandosene della sua ruina cussi dicea io peresco et so medesimo ad me causa della mia ruina et dello periculo la morte mia e dello dono della dextera mia e della stila che donai alla accepta." Aesopus, *La vita dell'Esopo e le favole del medesimo*, Francesco del Tuppo, Naples, 1485. Inc. Res M Yc129, BnF, Paris (ripr. Bibliothèque nationale de France): fab. 55, 300-301.

speed of the man's movement. Another semicircle is created between the falling branch and the other two branches that are already on the ground, which scan different moments of the fable. Right at the man's feet, we have in fact an axe accompanied by a branch that could be the one used for the axe-handle. In this way, the engraver might have wanted to condense the initial scene of the axe with no handle and the following sequence of the fixed axe cutting down the trees in the woodcut.

The engraver's decision to concentrate different moments of the fable in one image is particularly relevant with respect to Leonardo's way of composing images and words in his manuscripts.¹⁵⁵ This engraving method appears to be an iconographic model for Leonardo's faint studies of small figures in action in the drawing RL 12,644r preserved at the Windsor Collection (Figure 1-19). The Windsor sheet shows a series of sketches of human beings interacting with nature: some of them are digging, some are uprooting trees, and some others are carrying and chopping wood. Curiously, in the middle of the page, we have a sequence in pen and ink of humans organized in a semicircle who are carrying an axe similar to that in the woodcut. Slightly on the left, there is another man who is probably part of the same series, accompanied by a light sketch in pencil that could represent a plant. Just above it, a man is

¹⁵⁵ As previously noted, the illustration of the axe and the tree is also contained in the *Aesopus moralizatus*'s 1479 and 1485 editions. In all the mentioned illustrations for this fable the axe is represented twice: in the foreground, with no handle, and the subsequently fixed axe in the hand of the man. This confirms that, at the time, it was already common of illustrators to condense in a single image two stages of a narration. I chose Del Tuppo's case because it shows this trend at a more developed stage: not only do we have two axes with and without a handle represented, but also the branch at the moment of falling, and the branch on the ground before being turned into the handle.

tearing down a tree. Below them, on the left, the sequence continues, again in a semicircle, with a man who is pushing and, finally, pulling a plant (Figure 1-20).

The back of the sheet presents similar pencil-drawn sequences of human figures in action (Figure 1-21). Three of them in particular can be compared with the previous ones because they seem to be other studies of humans tearing down trees: the man in the right corner portrayed from the back, and the two men at the center and on the left of the sheet raising their arms while shaking either an axe or a branch (Figure 1-22). Similar figures are found in the Windsor drawings RL 12,645 and 12,646, in which the axe-movement becomes part of a catalogue of humans interacting with nature that creates a sequential narrative (Figure 1-23). Arguably, the visual reiteration of the motif of cutting down characterizing Leonardo's library section on Aesop provides the primary source of this series of drawings (Figure 1-24).

The same concept of a sequential narrative can be applied to Leonardo's fables, which were arguably composed in strict relationship with this series of drawings. In fact, in Leonardo's collection of fables we see pear (fable 23), grape (fables 12, 45), fig (fables 24, 32, 33) and walnut trees that are continuously cut down. Particularly, in the fable of the chestnut and the fig tree on fol. 187r from the Codex Atlanticus (fable 24), the chestnuts are victims of a gut-wrenching agony as punishment for the chestnut tree's pride (Figure 1-25).

The fable begins with the chestnut tree deriding the fig tree because the man is violently devouring its fruits. According to the chestnut tree, the fact that its children possess a hard outer skin dressed up inside with a delicate shirt is the evidence that it is honored by Nature:

Vedendo il castagno l'uomo sopra il fico, il quale piegava inverso a sé i sua rami, e di quelli ispiccava i maturi frutti, e quali metteva nell'aperta bocca disfacendoli e disertandoli coi duri denti, crollando i lunghi rami e con temultevole mormorio disse: "O fico, quanto se' tu men di me obrigato alla natura! Vedi come in me ordinò serrati i mia dolci figlioli, prima vestiti di sottile camicia, sopra la quale è posta la dura e foderata pelle, e non contentandosi di tanto beneficarmi, ch'ell'ha fatto loro la forte abitazione e sopra quella fondò acute e folte spine, a ciò che le mani dell'omo non mi possono nuocere" (*fab.* 24.)¹⁵⁶

At this point, it is the fig tree that, with a great laugh, points out the even more tragic destiny of the chestnut tree's offspring:

Allora il fico cominciò insieme co' sua figlioli a ridere, e ferme le risa, disse: "Conosci l'omo essere di tale ingegno, che lui ti sappi colle pertiche e pietre e sterpi, tratti infra i tua rami, farti povero de' tua frutti, e quelli caduti, peste co' piedi o co'sassi, in modo ch'e frutti tua escino stracciati e storpiati fora dell'armata casa; e io sono con diligenza tocco dalle mano, e non come te da bastoni e da sassi" (*fab.* 24.)¹⁵⁷

The chestnut fruits are *stracciati e storpiati* ('torn and maimed') by the humans, whose violence is underlined by the repetition with variation of synonymous phrases: *colle pertiche e pietre e sterpi, co' piedi e co' sassi, da bastoni e da sassi* ('with poles, sticks, and stones,' 'underfoot and with rocks,' 'with clubs and rocks').

¹⁵⁶ Leonardo da Vinci, Cod. Atl., fol. 187r; *Scritti letterari*, Marinoni, ed., n. 3. "A chestnut tree saw a fig tree approached by a man who pulled its branches toward him, plucked their ripe figs, and put them in his open mouth, tearing and twisting them in his tough teeth. Shaking its branches, the chestnut said with a noisy rustle: 'O fig tree, how much less you owe to Nature than I! See how snugly she arranged my sweet children, clothing them first in a thin jacket, which is then covered by a tough padded husk. And not content with such gifts to me, she has given them a secure dwelling, around which she has placed sharp and dense thorns, so that men's hands cannot hurt me.'" Transl. Marsh, *Renaissance Fables*, 297.

¹⁵⁷ Leonardo da Vinci, Cod. Atl., fol. 187r; *Scritti letterari*, Marinoni, ed., n. 3. "At this the fig, together with its children, began to laugh; and when they had stopped, the fig said: 'You should recognize that man has such ingenuity that he can rob you of your fruit by striking your branches with poles, sticks, and stones. And when your fruits have fallen, he will crush them underfoot and with rocks, so that the chestnuts burst from their armored housing torn and maimed. But I am carefully touched only by men's hands, and not beaten with clubs and rocks, as you are.'" Transl. Marsh, *Renaissance Fables*, 297.

Thereafter, on fol. 207r, we find the fable of the nut tree (fab. 31), which develops the same subject and is possibly inspired from the Aesopian tradition (Figure 1-26).

Il noce mostrando sopra una strada ai viandanti la ricchezza de' sua frutti, ogni omo lo lapidava (*fab. 31.*)¹⁵⁸

The Aesopic fable 152 provides a likely source for this fable:

Καρύα, παρά τινι ὁδὸν οὔσα καὶ ὑπὸ τῶν παριόντων λίθοις βαλλομένη, στενάξασα πρὸς ἑαυτὴν εἶπεν· Ἀθλία εἰμι ἐγώ, ἥτις κατ' ἐνιαυτὸν ἑμαυτῇ ὕβρεις καὶ λύπας παρέχω. Ὁ λόγος πρὸς τοὺς ἐπὶ τῶν ἰδίων ἀγαθῶν λυπουμένου.¹⁵⁹

Aesop talks about a nut tree growing by the side of the road that had a great many nuts. When the people walking along the road knock off the nuts by throwing sticks and stones the tree complains with sadness about its own nature as always a source of insults and suffering.

The context of the texts is the same: in both cases, people stone the nut tree because it shows its beautiful fruits on the street. The Aesopian fable offers an ordered sequence of actions, followed by the nut tree's flat line that only serves to introduce the moral referring to people who are hurt by their good nature. What characterizes Leonardo's version is the extreme brevity, in which the nut's monologue is completely omitted but the word-choice emphasizes the scene's

¹⁵⁸ Leonardo da Vinci, Cod. Atl., fol. 207r; *Scritti letterari*, Marinoni, ed., n. 23. "When the walnut tree showed the riches of its fruit to the passersby on the road, everyone threw stones at it." Transl. Marsh, *Renaissance Fables*, 301.

¹⁵⁹ Aesopus Scr. Fab. et Aesopica, *Fabulae*, 152. "There was a nut tree standing by the side of the road who had a great many nuts and the people walking along the road used to knock them off by throwing sticks and stones at the tree. The nut tree then said, sadly, 'Woe is me! People gladly enjoy my fruits, but they have a terrible way of showing their gratitude.' The fable indicts those ungrateful and wicked people who requite good deeds with cruelty." Transl. Laura Gibbs, *Aesopica: Aesop's Fables in English, Latin, and Greek* (Oxford: Oxford University Press, 2002). I decided to begin my analysis with the original Greek version because this fable is not documented in any Italian vernacular, Latin, or French edition of Aesopic collections which, to my knowledge, Leonardo could have accessed.

dramatization. The use of the gerund *mostrando*—meaning both ‘while’ and ‘because’ the nut tree ‘was showing’—expresses at the same time continuity and causality between the main and subordinate clauses. In addition, the use of the imperfect tense in the main clause: *ogni uomo lo lapidava*—‘every man was stoning’ and/or ‘...stoned it’—reinforces the continuity between the nut tree’s act of exhibiting and showing off its rich fruits, and the people’s reproach and destruction of the tree. And yet, overall, we can say that subjects and themes clearly match in the two versions.

The real problem is that the Aesopian fable of the nut tree is not present in any of the Aesopian editions suggested by scholars as reference for Leonardo’s fables—namely Del Tuppo, Fazio Caffarelli, Accio Zucco, and Lyon’s collections. The examination of other contemporary vernacular and French translations, in which the fable of the nut tree is also missing, suggests that Leonardo had access to the Aesopian fable from other sources. It is difficult to identify the actual archetype of the fable of the nut tree among Leonardo’s readings. As I anticipated, one of the most prominent rewritings of Aesop was Leon Battista Alberti’s *Apologi Centum*. At the time, his book was available in a vernacular translation that Leonardo must have surely known, as he directly referred to it in his fables.¹⁶⁰

¹⁶⁰ As I will discuss later in the next chapter, Leon Battista Alberti’s fable of the lily is one of the few certain sources for Leonardo’s fables.

Alberti uses nuts in two of his apologues, which differ from Leonardo's solutions but contains areas of interest for our discussion. In apologue 14 we have a chestnut that cries out its fatal destiny in a similar way to Leonardo's chestnut from fable 24:

Quando la castagna, mandato un gran sospiro, saltò in mezzo alla stanza, disse: "Non potevo sopportare più tanti affanni."¹⁶¹

In addition, Alberti stages a match between a nut and a worm, eternally bound in a circle of life and death:

Il verme rosicchiava la noce in cui era nato. "O veramente ingrato ed empio!"—disse la noce—"non cessi di recare danno a me che ho posto le condizioni del tuo esistere?" Rispose il verme: "Se tu mi hai generato per farmi morire di fame, hai agito ingiustamente."¹⁶²

At this point, we have to consider another text that was actually part of Leonardo's library, and shows the singular occurrence of a contest between figs and nuts in the literature contemporary to Leonardo: Burchiello's *Sonnets*. In the same way as in Leonardo's fable 24, Burchiello makes the figs laugh and the nuts dress in a uniform in the second sonnet from his collection:

I' vidi un dì spogliar tutte in farsetto
Le noci e rivestir d'altra divisa,
Tal che' fichi scoppiavan delle risa,
Ch' i' non ebbi giamai maggior diletto.¹⁶³

¹⁶¹ Leon Battista Alberti, *Apologhi*, 14. "Bursting out with a great gasp, a chestnut leapt into the middle of the room and said: 'I could no longer bear the tumult of such fiery passion.'" Transl. Marsh, *Renaissance Fables*, 43.

¹⁶² Leon Battista Alberti, *Apologhi*, 23. "A worm gnawed at the nut in which it was born. 'How ungrateful and impious you are!' the nut exclaimed. 'Would you destroy the one who brought you into the world?' 'If you bore me to die of hunger,' the worm replied, 'you did me wrong.'" Transl. Marsh, *Renaissance Fables*, 47.

¹⁶³ *I sonetti del Burchiello*, Michelangelo Zaccarello ed. (Turin: Einaudi, 2004), sonnet 2, vv. 1-4, 4. "I saw one day all the nuts in doublet undressing, and redressing in a new uniform, so that the figs burst into laughter: I had never been so delighted before." My translation. Note that in sonnet 93, v.14, 205 Burchiello uses the

Even though we are no longer in the face of a fabular narrative, the coincidence of the terms *divisa* ('uniform') in Burchiello and *camicia* ('shirt') in Leonardo, and the figs' derision of the naked nuts occurring in both texts is particularly striking.

After opening up our discussion to the field of poetry, I now advance my argument that Leonardo's nut-characters are mainly modeled on the *Nux*, a pseudo-Ovid's elegy drawing directly from the Aesopic fable of the nut tree which was published in Venice in 1481 and 1487 together with Ovid's *Epistolae Heroides*.¹⁶⁴

Ovid's *Epistolae* appears twice in Leonardo's lists under the name reference "Pistole d'Ovidio," and close to the annotation "Isopo." Also in this case, scholars hypothesized that Leonardo had a vernacular edition of the *Epistolae*—precisely, Luca Pulci's *Pistole* (Florence, 1481)—because of his scarce knowledge of Latin. Unfortunately, this edition does not contain the *Nux*. However, Leonardo could have known the *Nux* from later vernacular editions of the *Epistolae*, or thanks to his participation in courtly discussions with humanists, if not from the Latin version itself.

I opted for the Pseudo-Ovid's *Nux* as a source for Leonardo's fable of the nut tree because it shows dramatization of the same scene in which the plant's generation of fruits is a direct

expression *fichi castagnudi*, which could have contributed to Leonardo's decision to match walnut and fig trees.

¹⁶⁴ On the Pseudo-Ovid's *Nux*, see Luca Villani, "Le tre *nucis* dello Pseudo-Ovidio. Riflessioni sulla *Nux*," *Materiali e discussioni per l'analisi dei testi classici* 73 (2014): 99-112.

consequence of its being violently stoned by pedestrians—the Pseudo-Ovid’s *petere saxis* which is Leonardo’s *lapidare*:

Nux ego iuncta viae cum sim sine crimine vitae,
 A populo saxis praetereunte petor.
 Obruere ista solet manifestos poena nocentes,
 Publica cum lentam non capit ira moram:
 Nil ego peccavi nisi si peccare docetur
 Annua cultori poma referre suo.¹⁶⁵

Another interesting detail that ties Leonardo’s fables to the poem is the humanization of plants that are defined, since the very *incipit* of the poem, as ‘mothers’ and ‘fathers’ of their fruits:

At prius arboribus, tum cum meliora fuerunt
 Tum domini memores sertis ornare solebant
 Agricola fructu proveniente deos:
 Saepe tuas igitur, Liber, miratus et uvas,
 Mirata est oleas saepe Minerva suas,
 Pomaque laesissent matrem, nis subdita ramo
 Longa laboranti furca tulisset opem:
 Quin etiam exemplo pariebat femina nostro,
 Nullaque non illo tempore mater erat.
 At postquam platanis sterilem praebentibus umbram
 Uberior quavis arbore venit honor,
 Nos quoque frugiferae (si nux modo ponor in illis)
 Coepimus in patulas luxuriare comas.¹⁶⁶

¹⁶⁵ Pseudo-Ovid, *Nux*, 1-6. “I, a walnut tree, hard by the roadside, though my life be blameless, yet am pelted with stones by the passing folk. ’Tis flagrant sinners that doom is wont to overwhelm, when the people’s wrath brooks not slow delay: in naught have I sinned, unless it is taught that to render yearly fruit to the husbandman is a sin.” Ovid, *The Art of Love, and Other Poems*, trans. J.H. Mozley (London: William Heinemann, 1957), 236.

¹⁶⁶ Pseudo-Ovid, *Nux*, 1-20, 237. “But of old, when times were better, trees vied in fruitfulness; then were the mindful owners wont, as the fruit waxed ripe, to adorn with garlands the farmer-gods; often, therefore, O Liber, didst thou marvel at thy grapes, oft did Minerva marvel at her olives, and the apples would have hurt the mother tree, had not a long fork placed beneath the laboring bough brought succor: nay, by our example did women give birth, and none in those times was not a mother. But since more abundant

In Pseudo-Ovid we have repeated references to the beautiful procreation and pregnant uterus of plants—such as the expressions: *poma referre suo; fructu proveniente deos; pomaque laessent matrem; mater; frugiferae*; etc. Similarly, in Leonardo's fable of the nut and the bell tower (*fab.* 26), the nut addresses the plant that generated it as its old father, who is characterized by 'falling branches' (Figure 1-27).

Leonardo's fable of the nut and the bell tower narrates the story of a nut that falls in a tower bell hole while a crow is carrying her in its beak. The nut implores the wall to let her stay in the hole:

Trovandosi la noce essere dalla cornacchia portata sopra un alto campanile, e per una fessura, dove cadde, fu liberata dal mortale suo becco, pregò esso muro, per quella grazia che Dio li aveva dato dell'essere tanto eminente e magno e ricco di sì belle campane e di tanto onorevole sono, che la dovessi soccorrere; perché, poi che le non era potuta cadere sotto i verdi rami del suo vecchio padre, e essere nella grassa terra, ricoperta dalle sue cadenti foglie, che non la volessi lui abbandonare: imperò ch'ella trovandosi nel fiero becco della cornacchia, ch'ella si botò, che, scampando da essa, voleva finire la vita sua 'n un picciolo buso (*fab.* 26.)¹⁶⁷

As soon as the wall consents to her request, the nut grows and ruins the wall:

Alle quali parole, il muro, mosso a compassione, fu contento ricettarla nel loco ov'era caduta. E infra poco tempo, la noce cominciò aprirsi, e mettere le radici infra le fessure delle pietre, e quelle allargare, e gittare i rami fori della sua caverna; e quegli in breve levati sopra lo edificio e ingrossate le ritorte radici, cominciò aprire i muri e cacciare le antiche pietre de' loro vecchi

honour has come to planes that yield a sterile shade, than to any tree, we fruit-bearers also (if as a nut tree I am counted among them) have begun to luxuriate spreading foliage." Trans. Mozley, *The Art of Love*, 6-20.

¹⁶⁷ Leonardo da Vinci, Cod. Atl., fol. 187r, *Scritti letterari*, Marinoni, ed., n. 5. "Carried to the top of a high bell-tower by a crow, a nut had fallen into a crack in the wall and thus escaped the bird's deadly beak. The nut besought the wall: 'By the grace which God showed by making you so vast, so eminent, and so rich in bells of such beauty and such dignified sound, please lend me your aid. Since I could not fall beneath the green boughs of my aged father, where I might lie in the rich earth covered by his falling leaves, I beg you not to abandon me. When I was gripped by the fierce beak of the fierce crow, I vowed that if I escaped, I would end my life in a tiny hole.'" Transl. Marsh, *Renaissance Fables*, 299.

lochi. Allora il muro tardi e indarno pianse la cagione del suo danno, e, in breve aperto, rovinò gran parte delle sua membre (*fab.* 26.)¹⁶⁸

The nut's prayer recalls the Pseudo-Ovid's lamentation about her miserable destiny as compared to that of other fertile plants. Likewise, in Leonardo's fable the nut calls for help from the wall through the grace of God who gifted the wall with greatness, nobility, and many beautiful bells that produce an honorable sound. Again, the grandeur of the wall's description is used to highlight the nut's misery.

Furthermore, the description of the nut tree in the *Nux* also echoes, once more, Leonardo's fable 24 of the chestnut tree. Pseudo-Ovid's nut is a nude, barren strip, repeatedly deprived of its bark and stoned by people. The same happens to Leonardo's chestnut, destroyed and crippled by the man with clubs and rocks. But what connects the *Nux* the most with Leonardo's nut-fables is their stress on the fruits—a trait that is completely dismissed in the Aesopian tradition. These fruits are considered as the real sons of the nut trees and are condemned by their intrinsic nature (their skin and productiveness) to eternal suffering.

The nuts' destruction is a very productive theme not only in Leonardo's fables, but also in other fields of investigation such as his prophecies and allegories. Leonardo's prophecy of the

¹⁶⁸ Leonardo da Vinci, Cod. Atl., fol. 187r, *Scritti letterari*, Marinoni, ed., n. 5. "The wall was moved by these words, and gladly sheltered the nut in the place where it had fallen. Within a short time, the nut began to open and to extend its roots into the crevices between the stones, thus widening them. It sent forth its shoots from its cavernous hole, which soon rose up over the structure. And as its twisting roots grew thick, the plant began to breach the walls and to expel the ancient stones from their habitual places. Too late and in vain, the wall lamented the cause of its ruin. It soon cracked, and collapsed." Transl. Marsh, *Renaissance Fables*, 299.

nut (Cod. Atl., fol. 393r) addresses precisely the subject of nuts and chestnuts with these words (Figure 1-28):

DELLE NOCI E ULIVE E GHIANDE. Molti filioli da dispietate bastonate fien tolti delle proprie braccia delle lor madri e gittati in terra e poi lacerati.¹⁶⁹

Leonardo directly condemns nuts and chestnuts to the same violent destiny: their fruits are compared to babies torn away from their mothers to be beaten up, and shredded.

Subsequently, Leonardo develops the motif into an emblem, which testifies to his passage from textual to visual narratives:

Per il ramo della noce, che solo è percosso e battuto quand'ella ha condotto a perfezione li sua frutti, si denota quelli che mediante il fine delle loro famose opere son percossi dalla invidia per diversi modi.¹⁷⁰

Again, the nut is beaten because she generates perfect fruits and brings to conclusion the task that she was given by Nature. The emblem represents a nut tree branch with a scroll that says *per ben fare*—meaning that the nut fell because it did well. It is clear that the nut's virtuous behavior, which is in accordance with natural laws, will always generate envy and sorrow. It is not by accident that in the allegory of Joy and Sorrow, Leonardo represents Sorrow holding a nut branch (Figure 1-29).

¹⁶⁹ Leonardo da Vinci, Cod. Atl. 393r; *Scritti Letterari*, Marinoni, ed., 130. "Walnuts and olives and acorns and chestnuts alike. With merciless blows many little children will be taken from the arms of their mothers and thrown to the ground and then torn to pieces." My translation. Cf. Leonardo da Vinci, *Scritti*, Vecce, ed., n. 8, 124.

¹⁷⁰ Leonardo da Vinci, Ms. G, fol. 88v. "The branch of the nut tree that is struck and beaten after it has brought its fruit to perfection represents those who are struck in various ways by envy as a result of their illustrious deeds." My translation.

Interestingly, Leonardo's botanical drawing RL 12,422 shows a nut branch demonstrating the same composition of the emblem (Figure 1-30). This example illustrates that Leonardo carefully analyzed his plant subjects also from a scientific point of view to better understand their formal qualities and to translate them into traits of human behavior. The same type of investigation is performed in Leonardo's botanical writings, in which, for instance, we see plants that worry for each other and "turn their head toward their companions."¹⁷¹ These writings combine scientific examination with metaphorical personification of natural forms, and might even constitute the embryo of Leonardo's fables.

Leonardo's scientific observation of plants turns them into round characters, and highly differentiates them from traditional stereotyped plant-subjects. Aesop's nut and his plants in general are, in fact, mainly passive characters or mere elements in the fables' background. They do not perform any actions and have no evolution in the course of the narration: just because of their presence, they are either beaten or praised. Alberti's characterization goes a bit further: his nuts are dramatic subjects who whisper and accuse their enemies. And yet, it is in contemporary and classic poetry that we find the real seed of Leonardo's fables: Burchiello, who introduces the dialogue between nuts and figs that acts as the foundation of Leonardo's fable 24; and Pseudo-Ovid's theme of fertility, which is developed in fables 24, 26, and 31 of Leonardo.

Finally, a model for integrating the different literary and scientific traditions from which Leonardo's drew inspiration for his depiction of nuts is certainly the *Historia Naturale* from his

¹⁷¹ Cf. Leonardo da Vinci, RL 12427v.

personal library. In book XVIII chapter xviii of the Plinian encyclopedia, the nut's shadow is dangerous for all humans and plants standing close to her: it is another example of the nuts' misfortunes that may have inspired Leonardo. Furthermore, Pliny always discusses the nut in relation to other plants—such as the peach tree, the grape vine, and the fig tree—which are also featured close to one another in Leonardo's manuscripts.¹⁷² A particularly interesting passage from Pliny is the one devoted to the wood used by architects (XVI, lxii) which explains that the nut's branches are easily breakable and, when this happens, they tragically cry out for their wounds:

Facilmente sapre el noce et con lo strepito predice la sua roptura: il che intervene in Andro dove impauriti dallo scoppio fuggirono del bagno onnanzi che rovinassi.¹⁷³

The continuous reworkings of Leonardo's fables of the nut and the chestnut show that the artist is not satisfied with Plinian, Aesopian, Albertian, Burchiello's and Pseudo-Ovid's depictions of plants and their moral commendation of suffering. Leonardo is interested instead in understanding the mechanisms of natural transformation on multiple levels: the poetic and the visual, the aesthetic and the scientific, and the natural and the artificial.

¹⁷² In Pliny, *Historia naturale*, XVII, xiv Landino talks about *noce persico*, and in XVII, xxxiv he discusses how the walnut tree, the nut tree and other plants are used to make poles to support grape trees or other things. In book XVI, xxvii, fig and nut trees are coupled as plants extremely fecund, which bear their fruits from below, as opposed to the oak tree and the strawberry tree. The nut also appears in book XV, xii; XVI, xx, xli; XII, xliii; VII, xxi; XV, xiii, xxviii; XVI, xlv, lxxviii, lxxix.

¹⁷³ Ibid., XVI, lxii, 382. "The nut's branch is easily breakable and its rattling predicts its breaking. This once happened in Andro where everyone, afraid of its burst, run away from the bath." My translation. Here is the original text: "Facile pandatur iuglans, fiunt enim et ex ea trabes. Frangi se praenuntiat crepitu, quod et in Antandro accidit, cum e balineis territi sono profugerunt." Plin., *Nat. Hist.*, XVI, lxxxi, 223.

Leonardo's moral is not in defense of the suffering individual but in favor of Nature herself who is at first afflicted by the attacks of human artifice and then later organizes her revenge. The fertile nut is, in fact, destroyed by men with rocks and clubs, but she also destroys the man-made wall that naively hosts her. Furthermore, Leonardo's portrait of the difficult interaction between nature and artifice serves to illustrate another battle very dear to Leonardo: that of painting (the visual, aesthetic) against literature (the poetic, scientific). It is not by chance that Aesop also had a prominent role in this second phase of the fables' transformation.

The fable of the monkey and the bird (*fab.* 8) is the most successful example of Leonardo's illustration of the early modern word-and-image debate. This fable is part of a little catalogue of fables located on folio 187r from the Codex Atlanticus where the fable of the nut and the wall is also featured. Fable 8 appears to be drawn directly from the Aesopic fable of the monkey's children: Leonardo twists the model to both show the workings of nature and the victory of painting over literature:

Τοὺς πιθήκους φασὶ δύο τίκτειν καὶ τὸ μὲν ἕτερον τῶν γεννημάτων στέργειν καὶ μετ' ἐπιμελείας τρέφειν, τὸ δὲ ἕτερον μισεῖν καὶ ἀμελεῖν. Συμβαίνει δὲ κατὰ τινα θεῖαν τύχην τὸ μὲν ἐπιμελούμενον ἀποθνήσκειν, τὸ δὲ ὀλιγορούμενον ἐκτελειοῦσθαι. Ὁ λόγος δηλοῖ, ὅτι πάσης προνοίας ἡ τύχη δυνατωτέρα καθέστηκεν.¹⁷⁴

¹⁷⁴ Aesopus Scr. Fab. et Aesopica, *Fabulae*, 243, 1-5. "The monkey's children. Monkeys are said to bring forth two young ones, towards one of which only they bear affection, and out of their affection they nurse it very diligently; but the other they hate, and care not for it. Now it fell out, for a fatal destiny, that the mother so strongly hugs with passionate violence the beloved son that she strangled it. On the contrary, the one that is neglected is brought up to prefect age. The fable signifies that Fortune goes without doubt beyond man's forecast." My translation. See Esopo, *Favole*, Giorgio Manganelli, and Elena Ceva Valla, eds. (Rizzoli: Milan: 2009) fab. 307, 333. I quote the fable of the monkey and its sons in the original Greek because we are not certain about the version owned by Leonardo.

Aesop talks about the monkey that usually generates two sons, and treats one of them with great love while not caring for the other. Unfortunately, the monkeys' beloved son dies because the mother hugs it with too much strength. According to the moral, destiny wins over human intentions.

For his fable, Leonardo keeps a similar structure but substitutes the monkey's children with little birds and completely changes the moral:

Trovando la scimia uno nido di piccioli uccelli, tutta allegra appressatasi a quelli, e quali essendo già da volare, ne poté solo pigliare il minore. Essendo piena d'allegrezza, con esso in mano se n'andò al suo ricetto; e cominciato a considerare questo uccelletto, lo cominciò a baciare; e per lo isvecrato amore, tanto lo baciò e rivolse e strinse ch'ella gli tolse la vita.

È detta per quelli che, per non gastigare i figlioli, capitano male (*fab. 8.*)¹⁷⁵

When Leonardo's monkey approaches a net full of birds, the grown-up birds fly away. Then, the monkey gets the bird that cannot fly and kisses and hugs it to the point that it dies. In this case, the moral is about the negative consequences of excessive love that parents give their children.

Unfortunately, the fable is missing in the editions indicated by scholars up until today as Leonardo's sources.¹⁷⁶ Along with the case of the fable of the nut tree, this presents another

¹⁷⁵ Leonardo Da Vinci, Cod. Atl., 187r; *Scritti letterari*, Marinoni, ed., n. 6. "A monkey found a nest of small birds, and approached it joyfully. Since the chicks were all old enough to fly, he could only catch the smallest of them. Filled with joy, he returned to his lair with the bird in his hand. As he gazed the tiny bird, he began to kiss it; and in his immoderate love, he kissed and fondled and squeezed it so much that it died. / This applies to those who fare poorly because they don't discipline their children." Transl. Marsh, *Renaissance Fables*, 299.

¹⁷⁶ If the fable is completely missing in the vernacular editions, Leonardo could have read a version of it in the French edition that, according to the critics, belonged to his library (Lyon, 1484). However, I doubt that this is the original source of Leonardo because the two versions are too different both in format and meaning. In fact, the French translation uses the traditional idea of the monkey loving one son more than the other, but completely changes the story. In fact, it introduces a moment of danger which

strong piece of evidence that Leonardo's primary source for Aesop is neither a vernacular nor a French version, but possibly a Latin translation. We do know, in fact, that even though he did not have a humanistic education, Leonardo strived to learn Latin for a large part of his life, as documented in the numerous lists of Latin words and verb conjugations from his notebooks. Latin editions of Aesop were often used for Latin learning; therefore, it is probable that Leonardo had one of them in his personal library. A possible reference for Leonardo could also be the aforementioned Rinuccio da Castiglione's *Fabulae*, published in Milan in 1480. In this edition, under the title *De Simia*, we have in fact a Latin translation of the Aesopian fable of the monkey's children that could have inspired Leonardo's version (Figure 1-31):

Simiam duos catulos parere sertur, quorum ad unum duntaxat afficitur, et ex affectione illum diligentissime nutrit; alterum vero odit, negligitque. Contigit autem, quod qui in deliciis habebatur, a simia in somnis fuit suffocatus; quamobrem qui neglectus erat, ad perfectam

causes the monkey to realize that the hated son is worthier than the beloved one, and mixes the roles and actions of the loving and beloved subjects. Here is my transcription of the Lyon fable of the monkey's son: "La xxv fable est du singe et de ses deux enfans. / Celluy peut ayder que aulcunes foi l'on desprise. Ainsi quil appert par ceste fable dung singe a avoit deux enfans le quel aymoît lung et bays fait lautre le quel quaut il voulut fouyr devant les chiens celluy quil aymoît punt entre ses brac et commenca a fouyr. Et quant lautre vit quil sen fuvoit il luy saulta sur les espalles et pource que celuy quil avoit entre les bras lenpeschoit de fover il leiecta en terre. E lautre di baissoit fut saulve le quel de cette heure en avant le amenca a baisser et a embrasser. Et adoncques le singe le amenca a aymer portant plusieurs fois la chose despusee vault mieulx quela chose prisee. Car aulcunefoys les enfans quel on prise sont mains de bien que ceulx quel on desprise." I include here also my English translation of the text: "The one who is sometimes despised can be helpful. / Such as it appears in this fable of the monkey who had two sons. The monkey loved one of her sons and hated the other one. When she wanted to run away from the dogs, she took the son she loved in her arms and started to run. When the other son saw that she was running away, it jumped on her shoulders. Therefore, because the son that she had in her arms impeded her to run, the monkey left it on the ground. The son that she hated was preserved. At that point, this son started to kiss and hug her and the monkey began to love him. Often what is despised is worthier than what is loved because sometimes the beloved sons are more worthless than the despised ones."

usque aetatem, cen matris deliciae, suit educatus. Fabula significant, quod hominum prudentiam fortuna procul dubio superat.¹⁷⁷

I chose one of the many possible editions that Leonardo could have accessed: Rinuccio's translation published in Milan in 1480. This version is quite faithful to the original Greek, with the only exception that it does not mention that the monkey's beloved son dies strangled because 'the mother so strongly hugs [it] with passionate violence:' a crucial detail in Leonardo's fable.

Curiously, the same story of vehement love is recounted in the Plinian encyclopedia from Leonardo's library, where the monkey kills her beloved sons precisely by hugging them:

Sono affettionate molto a figliuoli. Portano queglii, che partoriscono in casa et monstrangli, et hanno caro che sieno tocchi intendendo che quello sia un congratularsi et rallegrarsi con loro. Il perchè molti n'uccidono per tanto abbracciargli.¹⁷⁸

¹⁷⁷ *De Simia. Vita et fabulae Esopi per Rimicium latinae factae*, trans. Rinicius (Milan: Gasparus de Cantono, 1480), Bibliothèque Nationale de France, Paris. "An ape is said to bring forth two young ones, towards one of which only she bears affection, and out of her affection doth nurse it very diligently; but the other she hated, and cared not for it. Now it fell out, that the one the ape so dearly loved, was strangled by her in her sleep: therefore, that which was neglected, was brought up to perfect age, as the mother's only joy. The fable signifies that fortune without doubt goes beyond men's forecast." My translation. See also: Charles Hoole, *Aesop's Fables in English and Latin*. Oxford, 2007-10, accessed January 3, 2017, <https://quod.lib.umich.edu/e/eebo/A26506.0001.001/1:5?rgn=div1;view=toc>.

¹⁷⁸ Pliny, *Historia naturale*, VIII, liiii, 10-40. "All the species of apes manifest remarkable affection for their offspring. Females, which have been domesticated, and have had young ones, carry them about and shew them to all comers, shew great delight when they are caressed, and appear to understand the kindness thus shewn them. Hence it is, that they very often stifle their young with their embraces." My translation. Interesting for the characterization of the animal are also the introductory and closing sections of the chapter on the monkeys: "Scimie. Le Spetie delle Scimie prossimane alla forma dell'huomo si distinguono per le code. Con meravigliosa industria col visco ungono e laccioli et calciarsi come veggono calciarsi e cacciatori. Mutiano scrive che giuocano a scacchi fatti di cera. Cornelio le distingue, et dice che quelle, che hanno la coda sono meninconose quando la luna e vecchia, et quando e nuova si rallegrano. Ma et gli altri animali temono il mancamento della luna [...] E cynocephali hanno piu salvatica natura, et per l'opposito mansueti sono e Satiri. Quelle che si chiamano

The uncovering of this passage demonstrates that Leonardo used not only the Aesopic tradition for the depiction of the monkey's parental love in form of fable, but also the description of the animal that he finds in Pliny. In fact, his monkey is *piena d'allegrezza* ('full of excitement') in the same way as the Plinian monkey rejoices (*rallegrarsi*) and felicitates (*congratularsi*) with her sons. In addition, the setting where the loving parental relationship takes place is also modeled in similar terms: if the Plinian monkeys generate their sons and have fun with them at home (*casa*), Leonardo's monkey brings the little bird—interpreted as her son—to her place (*ricetto*) in order to kiss and hug him.

And yet, although Leonardo develops his characterization of the maternal monkey with traits he finds in both Aesop and Pliny, after his substitution of the monkey's cubs with the little birds we are no longer confronted with a proper parental relationship. Leonardo's fable suggests that the monkey fails not for her excess of passion, but exactly because she cannot behave like a parent toward a bird: it is not possible to go against the laws of nature.

Calitrici sono quasi al tutto differentiate. Hanno la barba nel volto, la coda e molto diffusa nella parte dinanzi. Ma questo animale dicono che non vive se non in Ethiopia dove nasce." The Latin original reads: "Simiarum quoque genera hominis figurae proxima caudis inter se distinguitur. Mira sollertia: visco inungui, laqueisque calciari imitatione venantium tradunt, Muncianus et latrunculis luisse, fictas cera nuces visu distinguere, luna cava tristes esse quibus in eo genere cauda sit, novam exultatione adorari: nam defectum siderum et ceterae pavent quadripedes. Simiarum generi praecipua erga fetum adfectio. Gestant catulos quae mansuefactae intradomos pepere. Omnibus demonstrat tractarique gaudent, gratulationem intelligentibus similes; itaque magna ex parte conplectendo necant. Efferatior cynocephalis natura sicut mitissima satyris. Callitriches toto paene aspectu differunt: barba est in facie, cauda late fusa primori parte. Hoc animal negatur vivere in alio quam Aethiopiae quo gignitur caelo." Plin., *Nat. Hist.*, VIII, lxxx, 215-16. Other occurrences of the monkey in Landino's Pliny are: VIII, xvi, 24, viii, 57; III, v, 85; XXIII, i, 73; XI, xliii, 90, xliiii, 10.

Arguably, Leonardo's moral goes even beyond this level. In fact, the choice of contrasting a bird to a monkey fits perfectly within the discussion of the *Paragone* of the Arts. Leonardo could have used this fable to show that painting (conventionally represented as a monkey in European art) triumphs over literature and particularly poetry (the bird, in classical tradition). At the same time, the monkey's love toward the bird could also signify Leonardo's passion for literary classics, which is embodied in his homage to the Aesopic and Plinian models. The use of the grown-up birds which fly away at the beginning of the fable could also potentially represent Leonardo's devotion to antiquity which is preserved and lives forever, in comparison to writers of his time—with whom he is in competition.

Furthermore, the fable of the monkey offers the chance to discuss not only Leonardo's development of the Aesopic and Plinian models through empirical observation and allegorical interpretation, but also how it relates to the laws of mechanics. In fact, in Leonardo's corpus of manuscripts, the monkey features as the subject of two comparative anatomy drawings from the Windsor Collection. The first drawing (RL 12613) shows an anatomical study of the extended and bent arm and hand of a monkey, which could represent the two positions assumed by the body while performing a hug (Figure 1-32). The second drawing (RL 19026) illustrates comparison of the forces of a man and a monkey's arms.¹⁷⁹ Their left arms are both drawn to

¹⁷⁹ There is a passage in Landino's Pliny that talks exactly about the juxtaposition of the man and the monkey, which well resonates with these comparative anatomy drawings: "Scimie. Le Scimie hanno perfetta similitudine con la faccia humana nel naso: ne gli orecchi: nelle palpebre: le quali sole di tutti gli animali quadrupedi hanno il coperchio dell'occio anchora di sotto. La Scimia ha le poppe nel petto: et le gambe et le braccia volte al contrario: et cosi nelle mani ha l'ugna et le dita, et quell del mezzo più lungi sono

show the leverage obtained by the two differing attachments of the shoulder muscles and are followed by a mechanical drawing illustrating the principles of leverage (Figure 1-33).¹⁸⁰

The analysis of the mechanisms at the base of the monkey's arms could have led Leonardo toward an emblematic representation of the fable of the monkey and the bird such as the one for the fable of the nut. An image of a monkey approaching a little bird that I found at the Warburg Photographic Collection in London, with no indication of date and location, contains a strong visual reference to Leonardo's fable and anatomical studies, and testifies to the existence of this emblematic representation (Figure 1-34). The digital juxtaposition of sources from the Warburg collection and from Leonardo's personal books featuring monkeys and birds illustrates other possible visual sources for Leonardo's fable, while confirming its unique link with the image, mentioned earlier, of the monkey approaching the bird (Figure 1-35).

differenti alquanto da piedi: anche le dita delle mani sono alquanto lunghi: ma la palma e simile alla mano. Hanno il dito grosso et e nodolli come l'huomo: et l'enteriora sono tutte simili: ma il membro genital del maschio non e simile." Pliny, *Historia naturale*, XI, xliii, 90.

¹⁸⁰ The monkey's arm, as well as the human arm, is an example of lever—current research in robotics focuses on this theme. The drawings are probably studies of the relationship between the arm's posture and the power expressed. By varying the posture of our arms, we are capable of lifting either heavy or light loads, and of performing fast and slow movements. For instance, if we have to carry a heavy bag we keep our arms alongside the body and do not extend them. On the contrary, if we have to throw something, we need to extend our arms. The example of the nut can also be associated with mechanical relationship between forces. Particularly, in the fable of the nut and the bell tower (*fab.* 3) the nut operates through a mechanism similar to that of a jack. The jack is a device that allows making a great effort (to lift machineries), thanks to the low speed with which it performs. Generally, great speed is bound to low power, and low speed (the nut) carries great strength (for example, the capacity to destroy the wall). The nut acts according to the basic principle of conservation of power: P (Power) = F (Force) \times V (Velocity). The power of an organism can be expressed either through great force and low speed, or through small force and high speed. This interpretation of the drawings is derived from a discussion with Nicola Ceriani, mechanical engineer with a specialization in robotics.

Thanks to comparative analyses conducted through pre-existing digital databases, and the digitalization of early modern original sources, I demonstrated that Leonardo's fables are modeled on the Aesopian tradition that he received mainly from Latin sources—such as the Pseudo-Ovid's *Nux* and Rinuccio's *De Simia*—and reinterpretations of illustrations found in contemporary editions. This tradition is enriched by Leonardo's contact with contemporary poetry (Burchiello) and scientific didactic texts (particularly Pliny).

Leonardo's rewriting of fabular and scientific didactic traditions is at the basis of his development of textual and visual narratives. Leonardo twists the model by dramatizing the scene and introducing the humanization of his characters, which involves different fields of investigation such as allegorical interpretations, empirical observations, and mechanical laws. Through his transdisciplinary approach within the arts and sciences, Leonardo transforms Aesopic morals and Plinian encyclopedic knowledge into a representation of the tensions between nature and artifice, and uses artistic and literary methods to exalt the primacy of painting over literature.

2. FABLES AND EMBLEMS: INTERRELATIONS

Suggetto colla forma.

Muovesi l'amata per la cos'amata come il senso alla sensibile, e con seco s'unisce e fassi una cosa medesima.

L'opera è la prima cosa che nasce dall'unione.

Se la cosa amata è vile, l'amante si fa vile.

Quando la cosa unita è conveniente al suo unitore, li seguita dilettazone e piacere e sadisfazione.

Quando l'amante è giunto all'amato, li si riposa.

Quando il peso è posato, li si riposa.

La cosa cognosciuta col nostro intelletto.¹

In his *Michelangelo: A Life on Paper*, Leonard Barkan suitably begins the analysis of the word-and-image relationship in Michelangelo's *oeuvre* by introducing the multifaceted talented genius of Leonardo.² After giving an account of the several cases in which Leonardo purposefully interrelates images and text, Barkan states:

Indeed, it is this double presence, however variously emerges on the page, that nearly always signals the opposite of the doodle—that is, an attempt to make the kind of definitive statement about nature, technology, or art that requires both the *mimetic* or

¹ Leonardo Da Vinci, Cod. Triv., 6r.

² Barkan analyzes Michelangelo's manuscripts taking each sheet as an organic unity and regarding everything on it as equally relevant. He is the first scholar to examine the interplay of words and images in these sheets and not to approach them piecemeal, focusing on some elements (usually the figure sketches) to the exclusion of the others (such as fragments of verses, wording for a contract, and shopping lists). In my analysis of Leonardo's manuscripts, I employ the same approach, which blends art history, biography and detective work, and I enrich it with collaborative research in the field of philosophy, history of science, and engineering. Cf. Barkan, *Michelangelo: A Life on Paper*, ix-xii, 1-34.

diagrammatic qualities of the picture and the *discursive* or *descriptive* qualities of the text to nail down the truth.³

I believe that these lines perfectly summarize the puzzling entanglement between nature and artifice that takes place on Leonardo's sheets of paper, in form of the visual-aesthetic as opposed to—or coexisting with—the literary-scientific elements.

Following Barkan's interpretation, in this chapter I argue that Leonardo undertakes an aesthetic and philosophical project that uses empirical, diagrammatic, and pictorial strategies toward the investigation of nature. The focus of my inquiry is on a selection of Leonardo's fables, which feature adjacent sketches and scientific notations. By conducting a comparative analysis of his different modes of investigation, I show that Leonardo applied a consistent method in combining words and images for the 'true' representation of natural processes.⁴ Leonardo's method starts from empirical observation, then moves to the articulation of principles of mechanics and mathematics, and uses literary and pictorial interpretation in the form of emblems to reach new conclusions.

Leonardo's fables are a collection of fragments written between 1490 and 1494, to be found in the Institut de France manuscripts H and L, and the codices Forster III, Arundel and Atlanticus.⁵ These fragments—which are modeled on different traditions, such as the Aesopic

³ Ibid., 14. My italics.

⁴ By 'true representation of natural processes' I refer to Stephen Halliwell's discussion of the capacity of a work of art to deceive upon unity and harmony representing its "inner truth" (innere wahrheit) and the laws of its 'self contained world' ("eine kleine welt für sich"). Cf. Halliwell, *The Aesthetics of Mimesis*, 2.

⁵ On Leonardo's fables, see Jean Paul Richter, *The Literary Works of Leonardo da Vinci* (London:

fables, Pliny's encyclopedia, ancient bestiaries, and even Burchiello's sonnets—entail various modes of interaction between words and images. For instance, the examination of the fables of the citron, the peach, the fig, and the fig and the elm trees displays images acting as clarifying illustrations of the fables, which create a sequential narrative with the literary texts and scientific

Sampson Low, 1883); Edmondo Solmi, *Leonardo (1452-1519)* (Florence: Barbera, 1900); Dmitrij Merezhkovskij, *La resurrezione degli dèi: il romanzo di Leonardo da Vinci*, trans. Nina Romanowsky (Milan: Treves, 1901); Fumagalli, Giuseppina. *Leonardo prosatore: scelta di scritti vinciani, preceduta da un medaglione leonardesco e da una avvertenza alla presente raccolta e corredata di note, glossarietto, appendice sulle allegorie vinciane* (Milan: Dante Alighieri di Albighi, 1915); Giuseppina Fumagalli, *Leonardo "omo senza lettere"* (Florence: Sansoni, 1939); Leonardo da Vinci, *Scritti letterari*, Augusto Marinoni, ed. (1952, repr. Milan: Rizzoli, 2009); Giuseppina Fumagalli, "Leonardo e le favole antiche," in *Il mondo antico nel Rinascimento* (Florence: Sansoni, 1958), 111-47; Carlo Dionisotti, "Leonardo uomo di lettere," *Italia medioevale e umanistica* 5 (1962): 183-213; Anna Maria Brizio, *Scritti scelti di Leonardo da Vinci* (1973, repr. Turin: UTET, 1966); Giovanni Ponte, *Leonardo prosatore* (Genoa: Tilgher, 1976); Edmondo Solmi, *Scritti vinciani. Le fonti dei manoscritti di Leonardo da Vinci e altri studi* (Florence: La Nuova Italia, 1976); Gerolamo Calvi, *I manoscritti di Leonardo da Vinci: dal punto di vista cronologico, storico e biografico*, (1982, repr. Bologna: Zanichelli, 1925); Martin Kemp, "Leonardo da Vinci: Science and Poetic Impulse," *Journal of the Royal Society of Arts* 133 (1985): 196-213; Augusto Marinoni, "La biblioteca di Leonardo," *Raccolta Vinciana* 22 (1987): 291-342; Leonardo da Vinci, *Scritti*, Carlo Vecce, ed. (Milan: Mursia, 1992); Carlo Vecce, "Scritti di Leonardo da Vinci," in *Letteratura italiana. Le Opere*, vol 2. *Dal Cinquecento al Settecento*, Alberto Asor Rosa, ed. (Turin: Einaudi, 1993), 95-124; Carlo Vecce, "Calvino legge Leonardo," in *Studi sulla letteratura italiana della modernità per Angelo R. Pupino*, vol 2. *Dal secondo Novecento ai giorni nostri*. Elena Candela, ed. (Naples: Liguori, 1993), 393-402; Carlo Vecce, "Favole e facezie di Leonardo da Vinci," in *Letteratura italiana. Dizionario delle Opere*, Asor Rosa, ed., (Turin: Einaudi, 1999), 456-57; David Marsh, "Aesop and the Humanistic Apologue," *Renaissance Studies* 18 (2003): 9-26; David Marsh, *Renaissance Fables: Aesopic Prose by Leon Battista Alberti, Bartolomeo Scala, Leonardo da Vinci, Bernardino Baldi* (Tempe, Arizona: Arizona Center for Medieval and Renaissance Studies, 2004); Martin Kemp, *Leonardo da Vinci: The Marvellous Work of Nature and Man* (Cambridge: Oxford University Press, 2006); Paolo Galluzzi, "La natura di Leonardo: 'più tosto crudele matrigna che madre'," in *Natura. XII colloquio internazionale* Delfina Giovannozzi and Marco Veneziani, eds. (Rome: Olschki, 2008), 215-42; Giuditta Cirnigliaro, "Le Favole di Leonardo da Vinci. Struttura e temi," *Rivista di letteratura italiana* 31.2 (2013), 23-43; Carlo Vecce and Giuditta Cirnigliaro, *Leonardo: favole e facezie. Disegni di Leonardo dal Codice Atlantico. Codex Atlanticus 16* (Novara: De Agostini, 2013). My work refers to texts as they appear in the actual folio. For the fables' numbering and for their English translations, I refer to their most recent edition: Marsh, *Renaissance Fables*. For the Italian transcriptions of Leonardo's fables—as well as of other Leonardo's literary writings—I refer to: Leonardo da Vinci, *Scritti*, Vecce, ed., which uses the same fable numbering as Marsh.

notations adjacent to them. In few cases—such as in the fables of the lily and the mirror—the fable appears among scientific diagrams and illustrations on similar topics, which evolve in emblematic representations found in different manuscripts. Some other times, we find fables translated in the form of emblems, or sequences of images showing different scenes of the fable on separate folios—as the fables of the spider and the butterfly clearly exemplify.

In my discussion of Leonardo's pictographs, I briefly outlined what I mean by 'emblem'—here used as synonymous with *impresa*. According to Paolo Giovio's classical definition (*Dialogo dell'impresie militari et amorose*, 1551),⁶ *impresa* is a form of hermetic language composed of an image or *figura* (its body), and a caption or *motto* (its soul) that concurrently suggest a hidden meaning.⁷ As Kristen Lippincott astutely outlined, since the pirate publication of Andrea Alciato's *Emblematum liber* in 1531, it is not possible to propose a standard definition of 'emblem.'⁸ The term should instead be considered rather open in both meaning and form. As Ulrich Pfsisterer argued and Berndt Schirg broadly documented, the first

⁶ On Giovio's *Dialogo dell'impresie militari et amorose*, see note in paragraph 2.3. (*Chasing Leonardo's Fables in Late Cinquecento impresa*) of this chapter. Giovio's treatise is also considered in Chapter One, which broadly discusses Leonardo's pictographs.

⁷ Cf. Giovio, *Dell'impresie*, 6.

⁸ The publication of Alciato's treatise signals the birth of the emblem both as literary genre and as a book type. Each chapter of the *Emblematum liber* treatise focuses on an artistic image, which is described with a poetic composition or empigram. Cf. Andrea Alciato, *Emblematum liber* (Augsburg: Heinrich Steyner, 1531); Guido Arbizzoni, "Imprese as Emblems: the European Reputation of an 'Italian' Genre," in *The Italian Emblem: A Collection of Essays*, Donato Mansueto ed. (Glasgow: Glasgow Emblem Studies, 2007), 1-32; Lippincott, "The Genesis and Significance of the Fifteenth-Century Italian *Impresa*," 49-76; Lina Bolzoni and Silvia Volterrani, *Con parola breve e con figura: emblemi e imprese fra antico e moderno* (Pisa: Edizioni della Normale, 2008).

in-depth discussion of *imprese* is contained in Mario Equicola's *De opportunitate* (1507).⁹ Here, devices comprised of a figurative component that evoke Italian words by their phonetic values are called 'rebuses.'¹⁰ They represent a particular kind of *impresa* in which the limits of image-body and word-soul are blurred. This is why it becomes important to consider not only the links between Leonardo's fables and scientific studies at the basis of his emblems, but also if and how his *impresa* relates to the emblem tradition and is codified within this genre.

By the end of the fifteenth century, emblems represented major means of self-representation and self-definition within the Italian early modern social networks; they were a way for artists and writers to establish their courtly recognition.¹¹ Leonardo's production of *imprese* was certainly addressed to win the support of his patrons—apparently, he designed *imprese* for Ludovico Sforza, Cesare Borgia, Charles II of Amboise and Cardinal Ippolito

⁹ As Lippincott notes, *impresa* is considered as one of the emblem's forebears. Cf. Lippincott, "The Genesis and Significance of the Fifteenth-Century Italian *Impresa*," 50. Mario Equicola's *De opportunitate* is a Latin dialogue focusing on an *impresa* used by Cardinal Ippolito d'Este in his private letters, which is discussed by four interlocutors. Its earlier version is dated at 1503; the final version was published in 1507 by Joannes Antonius de Caneto. A discussion of Equicola's *De opportunitate* in relation precisely to Leonardo's emblems is developed in paragraph 2.3. (*Chasing Leonardo's Fables in Late Cinquecento impresa*) of this chapter. Cf. Schirg, "Decoding Da Vinci's *Impresa*," 136, 140.

¹⁰ For an analysis of Leonardo's rebuses, see Chapter One, paragraph 1.1.2. "*Libro di mia vocaboli*."

¹¹ Cf. Schirg, "Decoding da Vinci's *Impresa*," 135; Dorigen Caldwell, "Studies in the Sixteenth-Century Italian *Impresa*," *Emblematica* 11 (2001): 1-257; Guido Arbizzoni, *Un nodo di parole e di cose. Storia e fortuna delle imprese* (Rome: Salerno, 2002); Karl Giehlow, *The Humanist Interpretation of Hieroglyphs in the Allegorical Studies of the Renaissance: with a Focus on the Triumphal Arch of Maximilian I*, transl. Robin Raybould (Leiden: Brill, 2015); Giancarlo Innocenti, *L'immagine significante: studio sull'emblematica cinquecentesca* (Padua: Liviana, 1981).

d'Este.¹² Concurrently, as I argue here, it embodied his most successful mode of investigation and representation of nature, which moved from the fabular to the emblematic format by combining his technical-scientific and creative skills, and writing and drawing performances.

The chapter is composed of three parts. The first part, *The Walking Sage (and Other Plants) in Leonardo's Manuscripts* (2.1), opens with the exploration of fables accompanied by visual and scientific manifestations on herbs and plants—which are the most productive fields pertaining to Leonardo's textual and visual investigation of Nature. First, I give an overview of the main issues at stake in this chapter through the analysis of recurrent plant subjects in Leonardo's different fields of analysis as recorded in his personal books and in his own works (2.1.1). Subsequently, I use folio 207 from the Codex Atlanticus to show evidence of Leonardo's methodic organization of fables and emblems on plants and technical-scientific notations which provide the key for their meaning (2.1.2).

The second and third parts analyze four clusters of fables and emblems that variously relate to Leonardo's scientific studies, by focusing on his manuscripts, his sources and late sixteenth century emblem treatises. Section 2.2 (*Leonardo's Technical Modes: From Fable to Emblem*), concentrates on the first group of fables: the fable and emblem of the lily (2.2.1), and the fables and emblems of the spider and the grape, and of the spider and the keyhole (2.2.2). The comparative analysis of literary, artistic and scientific studies featuring on the same folios in

¹² Cf. Schirg, "Decoding da Vinci's Impresa," 149; Ladislao Reti, "Non si volta chi a stella è fisso: Le imprese di Leonardo da Vinci," *Bibliothèque d'Humanisme et Renaissance* 21.1 (1959): 7-54, 34; Vecce, "La parola e l'icona," 176.

Leonardo's manuscripts illustrates the intimate links between scientific knowledge and humanistic thought across his oeuvre.

Finally, 2.3 (*Chasing Leonardo's Fables in Late Cinquecento imprese*) surveys late sixteenth century emblem treatises to document the survival of emblems derived from Leonardo's fables and their subsequent fortune, in order to situate his practice into a broader context.¹³ Scipione Bargagli's *Dell'imprese* (1578) offers a perfect framework to examine the occurrences of subjects grouped according to inspirational motifs—natural pictures, fables, and artificial objects—employed by Leonardo for developing *imprese*. In addition, I discuss other relevant emblem treatises, such as Mario Equicola's *De opportunitate* (1507), Paolo Giovio's *Dialogo dell'imprese militari et amorose* (1555), Girolamo Ruscelli's *Le imprese illustri* (1566), Cesare Ripa's *Iconologia* (1645), and use digital databases on emblems and word and image devices—in particular, *Emblematica online* (<http://emblematica.grainger.illinois.edu/>) and the *Warburg Photographic Collection* (<https://warburg.sas.ac.uk/collections/photographic-collection/>)—to locate Leonardo's fables and emblems.¹⁴

Toward the end of the century, as revealed in this section, the most productive ground for the development of emblems was the description of natural elements, and specifically plants,

¹³ My contribution is situated within Carlo Vecce's thorough examination of the relationship between Leonardo's rebuses and early modern emblem handbooks, such as Giovio's *Dialogo dell'imprese militari e amorose* (1555) and Fabrizio Luna's *Fermagli* (1536). On this theme, Ladislao Reti's analysis of Leonardo's emblems is also fundamental. Cf. Vecce, "La parola e l'icona;" Reti, "*Non si volta chi a stella è fisso*," and relative bibliography.

¹⁴ See notes in paragraph 2.3 (*Chasing Leonardo's Fables in Late Cinquecento impresa*) of this chapter for a presentation of each late Cinquecento emblem treatise and digital source here mentioned.

birds and insects—as in the case of Leonardo. Furthermore, some of the subjects of Leonardo’s fables—which lack corresponding emblems in his production—are at the basis of later documented emblems. In addition, literary works, especially Aesopic fables, are mentioned as a good source of emblem inspiration, perfectly in line with Leonardo’s custom (2.3.1). Intriguingly, mechanical devices and artificial tools occupy relatively little space in these treatises and yet are widely used in Leonardo’s fables and emblems. This leads us to consider the possibility that Leonardo’s scientific-technical knowledge played a unique and important role—no less than the fables—in the creation and employment of his own emblems (2.3.2).

2.1. The Walking Sage (and Other Plants) in Leonardo's Manuscripts

2.1.1. *Sage & Grapes*

Leonardo's manuscripts reveal his strong preference for plants as object for artistic, literary, and scientific analysis. Plants not only occupy extended sections of Leonardo's *Libro di Pittura*, but also have an extensive presence in his fables, emblems, and rebuses. Furthermore, they are undisputed protagonists of a series of botanical illustrations refined and polished to look like presentation drawings. Therefore, it is not surprising that herbs, flowers, and vegetables in the form of *herbaria* drifted into Leonardo's personal library shelves in the course of his artistic career.

The name “erbolaio grande” (‘great herbal’) appears on the final list that Leonardo compiled of the books he owned on Cod. Madrid II (fol. 2v), a few titles after the notation “plinio,” together with innumerable books of every kind—including the Bible, Ovid, and Aesop. According to the most recent studies on Leonardo's library by Augusto Marinoni (1952), Romain Descendre (2013) and Carlo Vecce (2017), the generic title “erbolaio grande” leads in multiple directions. Among others, it could refer to Petrus Schöffer's *Herbarius* (Magonza 1484),¹⁵ or to the vernacular translation of the *Herbarius Pataviae* (Passavii 1485, and 1486), printed in Venice in 1522 with the name of *Herbolario volgare* (Figure 2-1).¹⁶

¹⁵ The USTC catalogue records this item as Jonas, *Herbarius*, *Herbarius latinus* (with German synonyms), Mainz: Peter Schoeffer, 1484.

¹⁶ Additionally, Leonardo's “erbolaio grande” can be connected to the *Herbarium di Apuleio di Medaura* (Rome 1480), the *Herbolarium de virtutibus herbarum* (Vicenza, 1491) and, finally, to Arnolfo de Villa

Even though the herbals identified as possible “*erbolaio grande*” were certainly popular in the Renaissance, direct references to any of them are not yet properly documented in Leonardo’s corpus of manuscripts. Leonardo’s title “*erbolaio grande*” might also stand for a booklet he wrote that is a sort of parallel to the uncompleted projects of the *Libro di mia vocabuli*, mentioned in the same list, the *Libro delle Acque* and, obviously, the well-renown *Libro di Pittura*. In this case, we do not have to imagine any curious treatise or fantastic dictionary *avant la lettre*, but just an orderly collection of botanical studies.¹⁷

Evidence for Leonardo’s project of a personal herbarium can be found on folio 197v and 317v from the Codex Atlanticus. These sheets show impressions of sage and grape leaves, which are subjects at the core not only of Leonardo’s botanical observations, but also of his creative projects, such as his fables and pictographs. A close examination of these materials shows that Leonardo’s scientific cataloguing of plants’ qualities according to traditional *herbarium* categories developed in literary and visual representations which synthesize his understanding and interpretation of natural laws.

Nova’s homonymous work (Venice 1499). Cf. Vecce, *Appendice*, in Leonardo da Vinci, *Scritti*, Vecce, ed., 257; Marinoni, *Appendice*, in Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 248; Descendre, “La biblioteca di Leonardo,” 592-95.

¹⁷ According to Maria Teresa Florio, Leonardo’s botanical studies could eventually be intended for an actual treatise on botany. Cf. Maria Teresa Florio, “Dalla pratica alla teoria: Leonardo e la natura,” in *Leonardo da Vinci: Metodi e tecniche per la conoscenza*, Marani and Maffei, eds., 169-76. On Leonardo’s botanical studies, see William A. Emboden, *Leonardo da Vinci on Plants and Gardens* (London: Helm, 1987), and relative bibliography.

Folio 197v from the Codex Atlanticus is one of the most curious examples of Leonardo's studies of plants (Figure 2-2). Leonardo fills up the top of the page with calculations of the weight of natural elements to then arrive at his conclusion, formatted as a philosophical verdict:

De' liquidi.

Quel corpo si mostra più grave ch'è in corpo più lieve; e quel si mostra più lieve che è in liquido più grievo.¹⁸

Leonardo's reasoning abruptly interrupts these words; he turns the page upside down, and begins his herbaria studies.

"Salvia" is the title of the capsized folio—written by Leonardo's pupil Francesco Melzi, elegantly, from left to right. The note stands at the very center of the folio, on top of an exquisitely executed impression of a sage leaf. As Karen M. Reed observed, it is "a nature print, made from the leaf of a sage plant, inked and stamped onto the page."¹⁹ At the bottom of the leaf, the same hand transcribes the abbreviation *caput* followed by a series of roman numbers *ccccxxxiii* (chapter 433) and a colon (:), which arguably refer to a book chapter. Right below that, we read, in Latin:

¹⁸ Leonardo da Vinci, Cod. Atl., fol. 197v. Particularly, Leonardo talks about the change of the air's levity if exposed to water, or to the earth: "Poniamo che l'aria abbia 4 di levità, essendo sott'acqua, e 8 s'ella è sotto la semplice terra." Ibid.

¹⁹ Karen M. Reed, "Leonardo and Botanical Illustration: Nature Prints, Drawings, and Woodcuts ca. 1500," in *Visualizing Medieval Medicine and Natural History, 1200-1550*, Jean A. Givens et al., eds. (Bodmin, Cornwall: MPG Books Ltd., 2006), 207.

Salvia, cap. CCCCXXXIII.

Nascitur in locis asperis: huius decoctum, cum foliis ramulis, urinam provocat, potum, / menstrua et infantes evellit, crines demorat.²⁰

The passage explains that the sage grows in harsh places and has peculiar medical properties, such as provoking urine and darkening the hair. After Edmondo Solmi identified the source in Dioscorides's *De Materia Medica* (1478)—precisely, *Dioscoridis Anazarbaei Pedaci, Opera latine, curante Pedro paduensi*—scholars generally disregarded this sentence, probably because it is not by Leonardo (Figure 2-3).²¹ And yet, the Latin inscription appears to be the only direct source for his herbarium, and can help to clarify his uses of this particular plant. Leonardo's version is, in fact, nearly identical to the original—slight differences are due to the particular edition of Dioscorides he had at his disposal.²²

²⁰ “Sage, cap. CCCCXXXIII. It grows in harsh places. A drink of decoction from its leaves <and> twigs provokes urine and expels the menstrua and <unborn> infants. It darkens the hair.” Transl. Reed, “Leonardo and Botanical Illustration,” 207. An interesting paragraph on the sage is also contained in the Macer Floridus, *De viribus herbarum* (Naples, Arnold von Brüssel), Inc. 9.V.1477.2°, preserved at the State Library of Munich.

²¹ Cf. Calvi, *I manoscritti*, 256; Solmi, *Scritti vinciani. Le fonti*, 137.

²² “Salvia, III, 35. Nascitur in asperis locis. Bibitur ad ciendam urinam foliorum ramorumque decoctum, menses et foetus idem trahit, capillum denigrat.” Solmi, *Scritti vinciani. Le fonti*, 137. For reference, I include the entire chapter on the sage plant: “Salvia, sive elelisphacon, frutex est ramosus, longus, virgas habens quadrangulas, et canas folia ma cotonei effigie, sed longiora, asperiora, crassiora, et quae sensim attritarum quasi vestium scabritiem referant, hirsute, subalbida, perquam iucundo odore, sed gravi: semen summis in caulibus sylvestri hormino simile gerit. In asperis nascitur. Menses cit, et urinas decoctum foliorum, ramorumque; potum et partus extrahit, et pastinacae marinae ictibus auxiliatur. Capillos denigrat, vulnere sanguinem cohibet, tetra ulcera purgat. Testium pruritus sedant rami foliaque, si eorum decoct cum vino foveantur.” *Dioscoridis*, cap. 34, 709.

Another fascinating reference to *salvia* that might have triggered Leonardo's interest in the subject is contained in the chapter on medicine from Pliny's *Naturalis Historia*, which Leonardo owned in the vernacular translation by Cristoforo Landino:

Alcuni credono che la medesima sia Bechion et con altro nome chameleuce ricevesi per cannone il fumo di questa secca e insieme con le radice e inghiottiscesi o tirasi per la via dell'halito, ma vuolsi gustare del vino cotto ogni volta che si manda giù la altera da alcuni è detta salvia simile al verbasco. Pestasi, et colata si scalda, e beesi per la tossa, et pel male del fianco. Ite contro a gli scorpioni, et dragoni marini. Giova ungere con l'olio di questa i morsi delle serpi.²³

Leonardo's knowledge of the sage plant is entirely drawn from medical books: Dioscorides' book of medicine (*De materia medica*) and Pliny's chapter on medicine (*Il resto delle medicine secondo le generazioni de morbi, e che cosa sia lichene, e quando cominciò in Italia, e del carboncello e Helephantiasse e Colo*). Both sources illustrate the healing qualities of the plant, when cooked and eaten: "*decoctum potum; bibitur*" in Dioscorides, "*colato si scalda; e così beesi*"

²³ Cf. the Latin version of the passage: "Altera a quibusdam salvia appellatur, similis verbasco: conteritur et colata calfit atque ita ad tussim laterisque Dolores bibitur, contra scorpions eadem et dracones marinos efficax. Contra serpentes quoque ex oleo perungi ea prodest." Plin., *Nat. Hist.*, 26, 31. See the complete Landino's text: "Cap. VI. Verbasco, Chamaleuce, Tossiagine, Aquilegia, e Salvia. Tre oboli similmente si beono vi verbasco. Questo fa il fiore giallo, e è di tantà virtù, che beuto sana anchora quelle che battono e fianchi. Il medesimo truovo della gentiana, la radice della hameleuce, la quale è chiamata tossillagine masticate, et bagnata in vino giova alla tossa, et alla gola. Cinque cioche d'issopo e due di ruta, e tre fichi cotti purgano il peto. Bechior, il quale anchora è chiamato tossilagine. Questo è di due ragione, e dove nasce il salvatico credono ci sia sotto acqua. Et questo segno hanno quegli che cercano l'acqua. Ha cinque o sette foglie alquanto maggiore che hellera bianchiccie di sotto di sopra pallide senza gambo, et senza fore, et senza seme, et con sottile radice." Pliny, *Historia Naturale*, 655.

in Pliny.²⁴ This is probably why in his collection of pictographs—in which the most productive categories are plants and fruits—Leonardo connects the sage with the idea of safety.

In a hidden angle of one of the most relevant testimonies of Leonardo's "libro di mia figure" (RL 12692v) Leonardo records a rebus on *salvia*. A tuft of leaves accompanied by the syllable *me* is labeled *salvia.me*, meaning 'save me' or, perhaps 'saved from me' (Figure 2-4). Therefore, fol. 197v not only directly refers to Leonardo's botanical sources, but is also organized as an actual *herbarium* page that inspires his creative projects. Curiously, in his pictographs, Leonardo uses the same systematic layout composed of the image of the plant with a brief text at the bottom of the sage page.

On the same folio, toward the left hand side, Leonardo layers another type of caption over the Latin transcription. The caption relates again to the leaf impression, and provides us with crucial information about the process behind his herbarium. Leonardo seems to point out a mistake that is, according to him, at the basis of the natural print:

Questa carta si debbe tignere di fumo di candela temperato con colla dolce, e poi imbrattare sottilmente la foglia di biacca a olio, come si fa alle lettere in istampa, e poi stampire nel modo comune. E così tal foglia parrà aombrata ne' cavi e alluminata nelli rilievi. Il che interv<i>ene qui il contrario.²⁵

²⁴ What is striking about Pliny's chapter on the sage plant is the imaginary quality of the last note on scorpions, sea dragons, and serpents. This introduces a universe of monsters and fantastic animals which represent the uncontrollable forces of nature. These figures have great fortune in Leonardo's literary writings and drawings.

²⁵ Leonardo da Vinci, Cod. Atl. 197v. "This paper should be printed over with candle soot tempered with thin glue, then smear the leaf thinly with white lead, in oil, as is done to the letters in printing, and then print in the ordinary way. The leaf will appear shaded in the hollows and lighted on the parts in relief; which

The sage leaf is, in fact, printed in negative, while the artist explains how to get a print in positive by painting the paper over with candle soot tempered with glue, and smearing the leaf with white lead. In this way, the leaf would appear shaded in the hollows and lighted on the parts in relief, as Reed noted.²⁶ This observation leads us to conclude that the first marks on the sheet must have been the natural print and the Latin text by Melzi. These were probably executed under Leonardo's direction, and subsequently criticized in the process by the master for their shortcomings.²⁷ Consequently, Leonardo kept the paper with the unsuccessful botanical attempt in order to jot down his considerations on natural elements at a later time.

The Schoenberg herbal (Ms LJS 419), a record of herbs compiled by several generations of users from the early fifteenth to the sixteenth century, shows a method of leaf impression very similar to the one used by Leonardo (Figure 2-5). The manuscript ends precisely with a nature print labeled *Salvia salvaticha*, accompanied by a note explaining the process behind the leaf impression: "dal roverso aconoscerla / hoc modo est" ('it is understood to be from the reverse [of the leaf] / in this fashion').²⁸ Even if the sage depicted here is different from Leonardo's

however comes out here just the contrary." Trans. Reed, "Leonardo and Botanical illustration," 210. Cf. Marinoni, *Il codice atlantico*, 272.

²⁶ Reed, "Leonardo and Botanical Illustration," 211.

²⁷ Ibid.

²⁸ Transl. Ibid., 224.

species (*Salvia officinalis*), this source testifies to a common editorial attitude in the selection and reproductions of herbs, which was a common trend in the fifteenth century.²⁹

The sage leaf sheet is not the only case of Leonardo's experimentation with impressions of plants. Carlo Pedretti already highlighted "another experiment with an actual leaf, foiled by smudged fingerprints (Leonardo's?),"³⁰ located on fol. 317v from the Codex Atlanticus and dated to around 1518, during Leonardo's French period. This image reproduces a grape leaf that was placed on the page and brushed or pounced with black pigment. This is probably a subsequent attempt to get a print in positive for his herbarium.

The sage and the grape leaves pages show that Leonardo was certainly interested in contemporary *herbarium* trends—from their page layouts to the mechanisms of reproduction of plants. In fact, not only did he have his own herbarium, but he was also organizing site-specific trips to see beautiful herbarium exemplars—as a note on fol. 37v of Codex Forster III illustrates: "Giuliano da Marliano ha un bello erbolaro, sta a riscontro degli Strami legniamieri."³¹

²⁹ Ibid., 224-26. The Schoenberg herbal is available online at the Schoenberg Center for Electronic Text and Image (SCETI) website. The illustrations in the manuscript often incorporate patterns, faces, and fantastic animals typical of the Pseudo-Apuleius herbal and alchemical herbals, which are elements easily found in Leonardo's corpus of manuscripts. A second set of images from the late fifteenth century shows more naturalistic features. Labels and descriptive texts in Italian, written mostly in sepia ink, caption the images.

³⁰ Carlo Pedretti, "Icarus at Fiesole," *Achademia Leonardi Vinci* 5 (1992): 178, cat. 1. Cf. Reed, "Leonardo and Botanical Illustration," 224.

³¹ Leonardo da Vinci, Cod. For. III 37v. Cf. De Toni, *Le piante e gli animali di Leonardo*, 25.

Manuscripts such as the *Carrara Herbal* by Jacopo Filippo (1390-1404) and the *Erbario di Rinio* (1445-1448) were surely attractive sources for Leonardo's hungry eye (Figure 2-6).³²

In comparison to the scarce yet essential presence of the sage, the grape has a surely more enduring life in Leonardo's manuscripts. A notation on Manuscript H, both textual and visual in its formulation, testifies to Leonardo's interest in the vines since the beginning of 1490s:

Vigne di Vigevine—.
A dì 20 marzo 1494.
E la vernata si sotterrano.³³

Later in 1498, we know that Leonardo received a vineyard as a present from Ludovico Sforza. Therefore, it is likely that Leonardo developed a preferred relationship with this particular plant, present in scientific and artistic, literary and visual outputs.³⁴

The grape as an object of scientific study appears in a botanical notation belonging to the *Libro di pittura*:

Tutte le ramificazioni delli alberi hanno il nascimento della sesta foglia superiore che sta sopra la sesta inferiore. Il medesimo hanno le viti, canne, come vite, pruno. Delle more e simili, salvo la vitalba e il gelsomino, che ha le foglie apiate l'una sopra l'altra intraversate.³⁵

³² On these manuscripts, see Otto Paecht, "Early Italian Nature Studies and the Early Calendar Landscape," *Journal of the Warburg and Courtauld Institutes* 13.2 (1950): 13-47. Cf. also Fiorio, "Dalla pratica alla teoria," in *Leonardo da Vinci: Metodi e tecniche per la conoscenza*, Marani and Maffei, eds., 173.

³³ Leonardo da Vinci, Cod. Atl., fol. 380r.

³⁴ The vineyard, which consisted of sixteen poles—over a hectare of land—, is now part of the Casa degli Atellani in Milan, restored in 1919 by the architect Piero Portaluppi and accessible to the public since 2015.

³⁵ Leonardo da Vinci, *Libro di Pittura*, 400.

The text explains the laws of phyllotaxis, which determines how leaves are disposed on the trunk in order to get the best illumination and, consequently, the best nutrition. Curiously, the majority of trees here mentioned become then protagonists of both Leonardo's fables and pictographs—the most productive being, of course, the grape tree. Again, on fol. 309v from the Codex Atlanticus the grape tree is used as an exemplary plant extending its branches toward the light:

E come l'omere sparso per la vite si leva in alto e versa per li tagliati membri, simil fa l'acqua che 'n alto si leva e versa per le rompiture de le somme altezze de' monti.³⁶

Subsequently, as De Toni observed, the grape takes over the field of applied botany, as wine is one of the main ingredients for diuretic recipes “a rompere la pietra in nella vescica” (‘to break the stone in the bladder’)³⁷ and even for color experiments:

³⁶ For reference, I quote here the rest of the fragment: “Similmente l'acque di basso in alto si levano, versando per le rotture delle somme altezze degli altissimi monti. / E siccome l'omere che versa per la tagliata vite, desidera solo il centro del mondo e verso quel si move, ancora l'acque, versando dalle altezze dei monti, in verso esso centro volentieri si movano. / E come l'acqua della tagliata vite, sopra le radici cadendo e 'n quelle penetrando, in alto si rileva, alla medesima tagliatura reversa, così l'acqua, delle sommità de' monti cadendo e per li meati della terra penetrando, in su ritorna.” Leonardo da Vinci, Cod. Atl., fol. 846v. See Giambattista De Toni, *Le piante e gli animali in Leonardo da Vinci* (Bologna: Zanichelli, 1922), 25. A very similar passage is contained in Cod. Atl., fol. 468r: “E come basso il sangue in alto surge e per le rotte vene della fronte versa, e come dalla inferior parte della vite l'acqua surmonta a sua tagliati rami, così dall'infima profondità del mare l'acqua s'innalza alle sommità dei monti, dove trovando le sue vene rotte, per quelle cade e al basso mare ritorna.” These texts are particularly relevant because they associate by means of analogy the grape's sap and the seawaters. In addition, they illustrate a circular process that is reflected also in the fable of the water cycle examined in Chapter One (paragraph 1.1.3. “Dì della voce per l'aria.” *Leonardo's Visual and Textual Lexicon*).

³⁷ The text continues as follows: “Piglia scorza d'avellano / Ossa di datteri / e sassifragia / semenza d'ortica, tanto dell'un quanto dell'altro / e di tutte fa polvere sottile e questo usa in vivanda a uso di spezie o voi la mattina a uso di sciropo con vino bianco tepido.” Leonardo da Vinci, Cod. Atl., fol. 270v-b. Interestingly, the only two medical recipes found in Leonardo's corpus of manuscripts, both concerning diuretic issues, are made of sage leaves or grapes.

Sappi che facendo bollire olio di Imo seme in modo che vi s'appicchi dentro il fuoco, gittandovi su il vino vermiglio, se ne leva fiamme grandissime di diversi colori e dura il fiammeggiare quanto dura il vino.³⁸

Leonardo's grapes reach the apex of their success in the context of his fables. Here, the grape tree features in different forms, such as vineyards and wine. Similarly to what emerges from his botanical writings on the subject, the grape tree is used either as a generic plant or—more likely—as an archetypal plant. Grapes are somehow tied to a character of apparent passiveness. On the one hand, they represent individuals who are rewarded because they remain faithful to Nature; on the other, grapes are ideal antagonists of those who decide to escape from their natural condition.

Among Leonardo's sources, grape in the form of wine already appears in Pliny's *Natural History*. Here, wine is the best source of nutrition for plants and is classified according to either its 'religious' or 'generous' character. Traditional plant characters—grapes in particular—fascinate Leonardo for their capacity to rule individuals' actions and remind them of their destiny. Exemplary in this respect is the *peredixion* tree featured in the *Physiologus*. In chapter XXXIII, doves hide from the dragon under the branches of the tree and eat of its sweet fruits. The dragon fears the tree's shadow and looks at it from a distance, with respect. It moves in accord with the tree's shade:

Set dum insidiatur columbis ille draco, ut rapiat aliquam earum, de longe considerat illam arborem. Si umbra illius arboris fuerit in parte dextera, se facit ille in parte sinistra. Si autem fuerit umbra illius in parte sinistra, ille fugiens in parte dextera se facit.³⁹

³⁸ Leonardo da Vinci, Cod. Atl., fol. 380r.

Charmingly, it is merely the plant's presence—without the use of words or actions—that suggests to the dragon what to do. Leonardo employs this codified subject as the symbol of life conducted in accordance with nature. Then, he characterizes and ties it to different human types, in order to show how each individual should conduct their existence. By interpreting the Plinian passage, Leonardo apparently combines the passive character of the grapes with that of plants in general terms. The result is that his grapes are behavioral models for every plant.

Grapes are also a favored setting of the Aesopic fables that Leonardo could find in his personal library collections. For instance, Aesop's fable 103 narrates of a deer that hides under a grape tree in order to escape a group of hunters. Then, feeling safe, the deer starts eating the tree's leaves so that the hunters hear his noise and wound him to death. "I deserved it" says the deer, "because I should not have hurt the one who rescued me."⁴⁰ Even though the grape tree is just part of the fable's setting, it does have a field of action in that the noise it produces causes the deer's death. However, we can interpret the plant's role as passive in nature: it moves only when the deer starts grazing it. Aesop represents the grape tree also in fable 339, in which it talks for the first time in the fable tradition: "Why do you want to damage me?" it

³⁹ "Il *Fisiologo* latino: *versio BIs*," in *Bestiari medievali*, Luigina Morini, ed. (Turin: Einaudi, 1996), 79.

⁴⁰ Aesopus Scr. *Fab et Aesopica, Fabulae*, 103; my translation. Here is the full version in the vernacular edition probably possessed by Leonardo, Accio Zucco's *Aesopus moralizatus*: "Un cervo che fuggiva dinanzi ai cacciatori, andò a nascondersi sotto una vite. Quando questi furono andati avanti di qualche passo, il cervo, illudendosi di essere ben nascosto, cominciò a brucare le foglie della vite. Ma sentendole muovere, i cacciatori si volsero, sospettarono, come era in realtà, che ci fosse qualche animale sotto le foglie, e colpirono a morte il cervo; il quale spirando esclamò: 'Ben mi sta, perché non dovevo far danno a chi m'aveva salvato.' / La favola mostra come Dio castighi chi fa del male ai propri benefattori."

says to the goat, “Is there not enough grass? In any case, I will be the one to provide the wine on the day of your sacrifice.”⁴¹

In a less grim and more playful context, Leonardo reenacts the Aesopic grape’s vindictive character in a series of fables on the clinical consequences of wine drinking. In fable 3, two cause-effect sentences express the revenge wine takes on the drunkard: “Il vino consumato dallo imbiaco. Esso vino col bevitore si vendica.”⁴² The more extensive version of this tale is fable 21, located on fol. 188v of the Codex Atlanticus. Here, the wine Maometto is about to drink beseeches Jupiter not to be transformed into urine—reenacting both the sage and the grape urinary properties:

Che fo io? Di che mi rallegro io? Non m’avvedo esser vicino alla mia morte e lasciare l’aurea abitazione della tazza, e entrare innelle brutte e fetide caverne del corpo umano, e li trasmutarmi di odorifero e suave licore in brutta e trista orina? E non bastando tanto male, ch’io ancora debba sì lungamente diacere in e brutti ricettacoli coll’altra fetida e corrotta materia uscita dalle umane interiora? (*fab. 21.*)⁴³

As a response, Jupiter gets Maometto drunk, who then legislates that Asian people should not drink wine anymore. In both the fables, the wine has a passive role; he endures his being worn

⁴¹ Aesopus Scr. Fab et Aesopica, *Fabulae*, 339; my translation.

⁴² Leonardo da Vinci, For. III, fol. 21r; *Scritti letterari*, Marinoni, ed., n. 46. “When wine is consumed by the drunkard, it takes revenge on the drinker.” Transl. Marsh, *Renaissance Fables*, 279.

⁴³ Leonardo da Vinci, Cod. Atl., fol. 188r; *Scritti letterari*, Marinoni, ed., n. 9. “What am I doing? Why am I happy? Don’t I realize that I am near my death and must leave the golden dwelling of this cup, and pass into the foul and fetid recesses of the human body, where my fragrant and sweet liquor will be transformed into foul and nasty urine? And if that’s not bad enough, must I then lie at length in foul receptacles mixed with the other fetid and corrupt matter excreted by human bowels?” Transl. Marsh, *Renaissance Fables*, 293.

out, and this allows it to obtain its revenge.⁴⁴ Among Leonardo's drawings, there is an illustration on folio 28r from the Codex Trivulzianus which is arguably related to these fables. The image shows a dancer pouring wine down from a horn that he holds in one hand while lifting his clothes with the other hand. It can represent Maometto's folly or the effects of the wine on the drunken person.

The destructive energy of the climbing grape is illustrated instead in four versions of the same fable that see the spider, the willow tree, and the old tree die because they seek the grape's company. In fable 12 and 45 the grape seems to function only as the ideal setting for the spider who gets ready to catch flies.⁴⁵ However, it is called to die of the same destiny: "Venne la vendemmia e fu pesto il ragno insieme coll'uve" ('At harvest time, the spider was crushed together with the grapes').⁴⁶ Similarly, the grape tree in fable 46 falls and dies without offering any resistance, together with the old tree to which it is attached:

La vite, invecchiata sopra l'albero vecchio, cadde insieme colla ruina d'esso albero: e fu, per la triste compagnia, a mancare insieme con quello (*fab.* 46.)⁴⁷

⁴⁴ Leonardo da Vinci, Cod. Atl., fol. 188r; *Scritti letterari*, Marinoni, ed., n. 9. Transl. Marsh, *Renaissance Fables*, 293.

⁴⁵ Cf. Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti letterari*, Marinoni, ed., n. 38. Transl. Marsh, *Renaissance Fables*, 283; Cod. Ar., fol. 42v; *Scritti letterari*, Marinoni, ed., n. 40. Transl. Marsh, *Renaissance Fables*, 313.

⁴⁶ Leonardo da Vinci, Cod. Ar., fol. 42v; *Scritti letterari*, Marinoni, ed., n. 40. Transl. Marsh, *Renaissance Fables*, 311.

⁴⁷ Leonardo da Vinci, Cod. Ar., fol. 42v; *Scritti letterari*, Marinoni, ed., n. 39. "A vine that had grown old on a old tree fell when the tree collapsed. Thus, it came to perish with its evil [painful] company." Transl. Marsh, *Renaissance Fables*, 313.

This is a slightly different case, because the grape is apparently the victim of the old tree's collapse.⁴⁸ However, this fable perfectly exemplifies the "passive" character of both plants and the 'painful company' of the vine. Like the spider and the old tree, also the willow tree, in fable 43 dies "per aver fatto compagnia con la vite" ('for having sought the company of the vine').⁴⁹

Leonardo's grape tree is, in the end, a character persecuted by misfortune, which drags with it every other creature it encounters on its path. The very same concept is at the basis of the pictograph *vitiperio*, composed of a drawing of grapes, *viti*, and a pear, *pero*, suggesting that the union of these plants is intrinsically harmful. At the same time, on the subject of the grape company we have the pictograph *m'agresto*. It shows the letter *m'* followed by a grape icon, to signify: 'I assimilate myself to the grapes.' With this wordplay, Leonardo lucidly summarises the 'painful company' of the vine and its faculty of dragging other creatures into its misfortune.

⁴⁸ In fable 43, the vine is also represented as a victim: "Vedendo il villano la utilità che risultava dalla vite, le dette molti sostentaculi da sostenerla in alto, e, preso il frutto, levò le pertiche e quella lasciò cadere, facendo foco de' sua sostentaculi." Leonardo da Vinci, Cod. H, fol. 112v; *Scritti letterari*, Marinoni, ed., n. 36. "When the peasant saw how useful the vine was, he supported it with many props to hold it up. Then, when he had harvested the grapes, he removed the stakes, let the vine collapse, and built a fire with the props." Transl. Marsh, *Renaissance Fables*, 311. It is interesting that vine's props are also called "bronconi," the same name used for the Medicean emblem. Cf. *Accademia della Crusca*, accessed February 11, 2018, <http://www.lessicografia.it/Controller?lemma=BRONCONE&rewrite=1>. On fol. 88v from Ms. H we have another mention of the vine in a political allegorical context: "Il Moro cogli occhiali, e la 'nvidia colla falsa Infamia dipinta, e la Giustizia nera pel Moro. La Fatica con la vite in mano." Here the vine signifies 'labor' and 'struggle,' which are often connected in Leonardo's manuscripts with the theme of misfortune.

⁴⁹ Leonardo da Vinci, Cod. Ar., fol. 42v; *Scritti letterari*, n. 41. Transl. Marsh, *Renaissance Fables*, 313.

What is more, he takes part in this botanical absorption—and, as a consequence, ties himself to the same misfortune (Figure 2-7).⁵⁰

The comparative analysis of the occurrences of the sage and the grape trees in Leonardo's manuscripts has revealed that his scientific cataloguing of plants' qualities according to traditional herbarium categories develops in the creation of characters for his fables and pictographs. Leonardo's scientific and literary texts are interwoven with visual notations in the space of his manuscripts, where characters evolve in synthetic representations of the interaction between natural elements, and between humans and nature.

2.1.2. *Other Plants in Sequence*

Fables, pictorial illustrations, and scientific notations are gathered together on the same sheet on folio 207r from the Codex Atlanticus, which is the perfect example of text and image conceived together in a sequential narrative (Figure 2-8). This folio can be considered one of the oldest documents concerning Leonardo's fables, as the annotation on the recto "a dì 23 d'aprile 1490" testifies.⁵¹ The sheet is organized in three columns, each containing eight elements. In the left

⁵⁰ On Codex Atlanticus, folio 59r, an amusing emblem apparently features the vine tree one more time. The emblem shows a scroll, on the right, which transmutes in a luxuriant vine's branch, on the left. It is labeled: "Quando penserai che io..., e io...", thus suggesting a reflection on Leonardo's personal condition.

⁵¹ Cf. Vecce, and Cirnigliaro, *Leonardo: favole e facezie*, 26. See also Richter, *The Literary Works*, n. 1275; Calvi, *I manoscritti*, 102-02; Fumagalli, *Leonardo omo senza lettere*, 203-05, 302-03; Brizio, *Scritti scelti*, 99-102; Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 88-89; Leonardo da Vinci, *Il Codice Atlantico*, Marinoni ed., 279-301; Pedretti, *The Codex Atlanticus of Leonardo da Vinci*, vol.1, 109-10; Leonardo da Vinci, *Scritti*, Vecce ed., 62-63, 100-01; Edoardo Villata, *La biblioteca, il tempo e gli amici di Leonardo*, 64.

column, we can see five fables on plants, followed by three notes on sowing. Corresponding illustrations occupy the central column and, on the right, there are eight related botanical observations. The first fable is about a citron tree that, by growing a fruit on its crown, dies under its weight:

Avendo il cedro desiderio di fare uno bello e grande frutto in nella sommità di sé, lo mise a seguizione con tutte le sue forze del suo omore. Il quale frutto, cresciuto, fu cagione di fare declinare la elevata e diritta cima (*fab.* 29.)⁵²

Accordingly, the connected illustration shows the plant bent over by a gigantic citron fruit. Before that, on the same line, a related observation denounces people who cut horses' nostrils with the aim to correct the workings of nature:

E molti osservano questa usanza quasi come se credessino la natura aver mancato ne' le necessarie cose, per le quali gli uomini abbino a essere suoi correttori.⁵³

The citron tree, seeking to exceed its capacity, thus becomes a symbol of extreme pride in human beings who try to correct Nature.

Immediately underneath, we encounter the fable of the peach tree, which is also uprooted due to the weight of its fruits:

Il persico, avendo invidia alla gran quantità dei frutti visti fare al noce suo vicino, diliberato di fare il simile, si caricò de' sua in modo tale, che 'l peso di detti frutti lo tirò diradicato e rotto alla piana terra (*fab.* 30.)⁵⁴

⁵² Leonardo da Vinci, Cod. Atl., fol. 207r; *Scritti Letterari*, Marinoni, ed., n. 21. "A citron tree wished to grow a handsome and large fruit at its very tip, and strove to do this using all the strength of its sap. But when the fruit grew, it caused the tree's lofty and upright tip to lean to one side." Transl. Marsh, *Renaissance Fables*, 301.

⁵³ Leonardo da Vinci, Cod. Atl., fol. 207r. "And many people follow this custom as if they believed that nature did not provide what is necessary, and humans should correct nature." My translation.

The corresponding illustration shows two of the plant's branches touching the ground. The branches are covered with a large number of small fruits. The botanical caption next to the illustration describes how nature supplies the tree, stripped of its bark, with as much sap as it needs:

L'albero in qualche parte scorticato, la natura che a esso provvede, volta essa iscorticazione per maggior somma di nutritivo omore che in alcuno altro loco, in modo che per lo primo detto mancamento li cresce molto più grossa scorza che in alcun altro loco. Ed è tanto movente ess'omore, che, giunto al soccorso loco, si leva parte in alto, a uso di balzo di palla, con diversi pollulamenti overver germugliamenti, non altrimenti ch'una bollente acqua.⁵⁵

Once again, Leonardo comments how Nature takes care of her creatures by restoring their losses, and censures anyone who contravenes her laws.

Below the fable of the peach, there is the fable of the walnut tree, which is stoned because it displays its abundant fruits to passersby (fable 31). Beside it, Leonardo has sketched a luxuriant plant extending six thin branches. The last two fables, 32 and 33, are about a fig tree. In the first, the men destroyed the fig tree because of its beautiful fruits. In the second, the fig animatedly converses with an elm tree about the future of their offspring, which are humanized with the word *prole* ('children'). In the related illustrations, the fig tree is in both cases depicted as a scrawny plant, while the elm is a tall straight plant.

⁵⁴ Leonardo da Vinci, Cod. Atl., fol. 207r; *Scritti Letterari*, Marinoni, ed., n. 22. "The peach tree envied a neighboring walnut tree for the great quantity of fruit. Trying to rival the walnut tree, the peach tree loaded itself with so much fruit to the extent that the weight of its fruits uprooted it and cast it to the ground." Transl. Marsh, *Renaissance Fables*, 301.

⁵⁵ Leonardo da Vinci, Cod. Atl., fol. 207r. "Nature provides for the partially decorticated tree, by adding sap to the wounded part more than to the other parts. In this way, the skin in the wounded part becomes stronger than in the other parts. And this sap is so dynamic that, when it reaches the rescued part, it bounces like a ball, with many gushes it spurts, similarly to boiling water." My translation.

Initially, Leonardo introduces single characters, as in the fables of the citron, the walnut, and the fig trees (fables 29, 31 and 32). Subsequently, he pairs them: the walnut tree with the peach tree (fable 30), and the fig tree with the elm tree (fable 33). All the fables are aligned one after the other, next to the comment on the skinned plant, which is arguably the primary source of inspiration for the sequential narrative.

With order, from right to left, we have botanical observations, followed by schematic drawings of plants and their relative fables. In the middle of the sheet, we read *Significatione notta* ('Signifying script'). This annotation is by Leonardo's pupil Francesco Melzi, and seems to imply that writings and illustrations offer reciprocal exemplification and explanation.⁵⁶ What's more, it suggests a tight connection between natural observations and universal laws. Botanical notations are, in fact, crucial elements for the development of Leonardo's sequence of reasoning: they represent natural examples of the fables' morals and they anticipate the actual consequences of the behavior condemned by the fables.

Besides a horizontal correspondence of the elements in this folio, there is also a vertical interdependence between them. In other words, fables with similar themes and subjects are grouped together: the citron and the peach tree are both uprooted (fables 29 and 30), the walnut and the fig are overthrown (fables 31 and 32), and in the last two fables the main character is the fig (fables 32 and 33). Lexical and structural cross-references link some of the texts:

⁵⁶ According to Vecce, this annotation testifies the reason to group together Leonardo's fables and *facetiae* in a publication (Vecce and Cirnigliaro, *Leonardo: favole e facezie*, 13).

Avendo il cedro desiderio di fare uno *bello e grande frutto* in nella sommità di sé, lo mise a seguizione *con tutte le sue forze* del suo omore. Il *quale frutto*, cresciuto, fu cagione di fare declinare la elevata e diritta cima (*fab. 29.*)⁵⁷

Il persico, avendo invidia alla *gran quantità dei frutti* visti fare al noce suo vicino, diliberato di fare il simile, si caricò de' sua *in modo tale*, che 'l peso di *detti frutti* lo tirò diradicato e rotto alla piana terra (*fab. 30.*)⁵⁸

In the first two fables, the predicates define an attitude of the character (“avendo desiderio;” “avendo invidia”) toward similar objects (“*bello e grande frutto*,” “*gran quantità di frutti*”). Similar complements are then used to outline the main action of the character (“mise a seguizione *con tutte le sue forze*,” “si caricò *in modo tale*”). Finally, lexical references (“*quale frutto*,” “*detti frutti*”) and verbs belonging to the semantic field of ‘falling’ characterize the consequence of the main action (“declinare;” “tirò diradicato e rotto”).

The sequence is completed by the fables of the walnut and fig trees, which both begin with run-on sentences that illustrate opposite situations: the walnut is flourishing while the fig tree is bereft of fruits:

Il noce mostrando sopra una strada ai viandanti la *ricchezza* de' sua *frutti*, ogni omo lo lapidava (*fab. 31.*)⁵⁹

⁵⁷ Leonardo da Vinci, Cod. Atl., fol. 207r; *Scritti Letterari*, Marinoni, ed., n. 21. “A citron tree wished to grow a *handsome and large fruit* at its very tip, and strove to do this using *all the strength* of its sap. But when the *fruit* grew, it caused the tree’s lofty and upright tip to lean to one side.” Transl. Marsh, *Renaissance Fables*, 301. Emphasis mine.

⁵⁸ Leonardo da Vinci, Cod. Atl., fol. 207r; *Scritti Letterari*, Marinoni, ed., n. 22. “The peach tree envied a neighboring walnut tree for the *great quantity of fruit*. Trying to rival the walnut tree, the peach tree loaded itself with so much fruit *to the extent* that the weight of its *fruits* uprooted it and cast it to the ground.” Transl. Marsh, *Renaissance Fables*, 301. Emphasis mine.

Il fico stando *senza frutti, nessuno* lo riguardava. Volendo col fare essi *frutti* essere laldato da li omini, fu da quelli piegato e rotto (*fab. 32.*)⁶⁰

The first fable consists of just one sentence articulated in two propositions, one illustrating the causes and the other the consequences of the walnut's bearing fruits. The second fable reenacts the same structure in two sentences that are devoted, first, to the causes and consequences of the fig's sterility and subsequently of its fertility.⁶¹ Leonardo creates modular structures and then develops his fables' narrative through repetition and the addition of elements that pertain to the vocabulary, the syntax, and the word order. Analogous variants concern the same situation recounted through description and then through dialogue mode, such as in the fables of the fig (24 and 25).

Further analogies can be drawn between the fables and the botanical observations. For instance, the word *omore* ('sap') appears in both the fable of the citron tree and in the second observation. In the fable, the citron tree uses all the energy found in its sap ("tutte le forze del suo omore") to give birth to its fruit, but with disastrous results. On the contrary, the caption illustrates how Nature succeeds in healing the tree by adding more and more sap to it ("maggior

⁵⁹ Leonardo da Vinci, Cod. Atl., fol. 207r; *Scritti Letterari*, Marinoni, ed., n. 23. "When the walnut tree showed the *riches of its fruit* to passersby on the road, *everyone* threw stones at it." Transl. Marsh, *Renaissance Fables*, 301. Emphasis mine.

⁶⁰ Leonardo da Vinci, Cod. Atl., fol. 207r; *Scritti Letterari*, Marinoni, ed., n. 24. "When the fig tree had *no fruit*, *no one* looked at it. When it sought praise by bearing fruit, people bent and broke it." Transl. Marsh, *Renaissance Fables*, 301. Emphasis mine.

⁶¹ The theme of plants' relationship with their fruits can be connected to that of the artist with his artworks. Cf. Vecce and Cirnigliaro, *Leonardo: favole e facezie*, 14.

somma di nutritivo omore [...] tanto movente”). The comparison clearly elucidates the positive consequences of actions pursued by the healing power of Nature and the negative outcomes of those who oppose her.

References and oppositions are also expressed through images. For instance, the bent citron is illustrated beside the toppled peach tree, and then the walnut and the elm are both represented standing upright. In the architecture of the sheet, the text unfolds through distinct and communicating segments, supported by images and scientific notations. Leonardo creates a unitary visual and textual narrative by combining different procedures—the scientific notation, the illustration, and the fable—conceived according to the same structure. The unifying theme’s catering to her creatures’ needs.

Creatures are initially presented alone and then in dialogue with each other, and all these situations imply the loss that attends disagreement with natural laws. If fables show plants dramatically losing their balance or their fruits, the notes on sewing illustrate how the wood is coldly cut, deprived of its skin, and selected.

The horizontal placement of the elements in the page goes from general statements to specific natural pictures. The vertical order proceeds instead from the particular (example) to the universal (law). In fact, the column of scientific notes begins with the descriptive texts on the horses’ nostrils and the tree stripped of her bark. These are followed by considerations about the passing of time, artistic exercise, the soul and the body.

The last note posits Nature as the foundation for “le buone lettere.” In this way, Leonardo connects the reading of empiric data to a certain kind of literature—and art—which is developed in accordance with Nature, offering also the interpretative key for the procedure that he uses in this sheet.

2.2. Leonardo's Technical Modes: From Fable to Emblem

2.2.1. *Lilies*

Since April 1490, when fol. 207r was compiled, Leonardo gradually increased his production of works on paper focusing on the interpretation of nature in scientific, literary, and visual fields of analysis. Besides the innumerable botanical studies and illustrations that are scattered throughout his manuscripts, Leonardo fills up 20 folios with 52 fables and around 50 pages with various drafts of emblems, allegories, and pictographs—171 in Marinoni's catalogue.⁶²

There is no other folio that shows Leonardo's purposeful interaction of scientific notations, fables and emblematic illustrations as plainly outlined as it is on fol. 207r. However, Leonardo's scientific, literary and artistic modes of investigation are often employed simultaneously and function as interchangeable pieces in his creation of fables and emblems. The systematic juxtaposition of botanical observations with fables and illustrations of plants on fol. 207r makes this document a unique model sheet for Leonardo's compositional methods in drawings and writings devoted to the study of natural processes.

Through case studies on the fable of the lily and the spider, I intend to demonstrate that the nexus of causes and consequences at the basis of the fables of the citron, the peach, the walnut, the fig, and the fig and the elm trees is a distinctive feature of Leonardo's fabular writing. This structure is arguably modeled on principles of mechanics and mathematics and is the

⁶² See Marinoni, *I rebus di Leonardo*. The same catalogue of pictographs was reprinted again in 1983 in Marinoni, *Rebus*. Cf. also Vecce, "Parola e immagine," 24-30.

fundamental element of Leonardo's creative procedure. Leonardo transfers his model scheme from the scientific to the literary-artistic field in order to develop his fables into emblematic representations.

In Leonardo's Manuscript H, a one-phrase fable suddenly appears on a sheet entirely dedicated to diagrams about mechanics (Figure 2-9). It describes a lily that is dragged away by the stream because she stands boldly on the riverbank:

Il ligio si pose sopra la ripa di Tesino / e la corrente tirò la ripa insieme col lilio (*fab.* 41.)⁶³

The text draws on Leon Battista Alberti's *Lilii flos* as a primary source, recalling that writer's synthetic modular style and his aim of transmitting ethical and philosophical notions. According to Carlo Pedretti and John Venerella, the fable and the apologue convey the same meaning: "the lily could have saved itself had it not had such lofty desires."⁶⁴ However, a comparison of the two versions illustrates why Leonardo and Alberti's reasons for condemning the lily are clearly divergent:

⁶³ Leonardo da Vinci, Ms. H, fol. 44r; *Scritti Letterari*, Marinoni, ed., n. 34. "The lily sets itself on the banks of the river Ticino, / and the current sweeps away both the bank and the lily." Transl. Marsh, *Renaissance Fables*, 311.

⁶⁴ *The Manuscripts of Leonardo da Vinci in the Institut de France: Manuscript H*. John Venerella, ed., and trans. (Milan: Ente Raccolta Vinciana, 2003), 49. Venerella bases his observation on Pedretti's translation from Alberti's *Opuscoli Morali*, Venice, 1568: "The pale and frail lily, as the river was approaching it, was determined to place all care and thoughts in maintaining its ancient and well-established dignity by greeting all the great and swollen waves of the upcoming river. Finally, as those arrived, it fell, and yet it could have saved itself, had it not had the desire to aim at a lofty place." Pedretti, *Commentary*, cat. 1319.

Lilii flos, perterritus et pallens, dum propinquus fons ad se esset derivatus, pristinam suam gravitatem ad omnes tumidiore undas, quom ad se adplicuissent, consalutandas converterat, quoad undarum appulsu procidit. Servasset ille quidem salutem si non dignitatem abiecisset.⁶⁵

Alberti's lily is dragged away because she does not oppose the current but bows down, thus sacrificing her dignity. Instead, in Leonardo's fable the frail flower dies exactly because she opposes the greater current. More than a moral tale, Leonardo seems to stage a natural picture of a small biological force (the lily) opposing a greater physical power (the current).⁶⁶

From Leonardo's collection, only the fable of the lily has a recognizable source. Therefore, this fable has received significant attention from critics.⁶⁷ Nevertheless, none of them discusses where the fable is located in Leonardo's corpus of manuscripts, which is the point of departure of my analysis.

⁶⁵ Alberti, *Apologi centum*, II. 'When a nearby spring overflowed its banks, a lily flower, pallid with panic, forgot her former gravity and bowed to greet the approaching swollen waves. But she fell beneath their rushing waters, and would have saved her life if she hadn't sacrificed her dignity.' Transl. Marsh, *Renaissance Fables*, 70. Thanks to the substitution of some terms and the simplification of the story, Leonardo illustrates an occurrence whose meaning is opposite to Alberti's. In fact, Alberti's lily is carried away by the river waves because it bows down to greet them, renouncing its dignity. While Alberti proposes an active resistance to nature, Leonardo, on the contrary, condemns the lily for its presumption in trying to overcome the river's tide and represents man's action beyond his means. A more exhaustive discussion of Leonardo's fable of the lily and Alberti's apogee on the same subject is found in my published article "Le Favole di Leonardo da Vinci," 23-43. For a discussion of Leonardo's fables in relation to Alberti's apologues see Marsh, *Renaissance Fables*, and Armando Bisanti, "Leon Battista Alberti, Leonardo e il fior di giglio," *Interpres* 22 (2003): 276-91. On Leon Battista Alberti's literary works see also Leon Battista Alberti, *Dinner Pieces: A Translation of the Intercenales*, David Marsh, ed., (Binghamton, NY: State University of New York, 1987).

⁶⁶ With the terms 'force' and 'power' I do not refer, in this context, to mechanical categories. I will specifically address and discuss the categories of classical mechanics, or 'natural powers'—namely 'force,' 'motion,' 'percussion' and 'weight'—in Chapter Three.

⁶⁷ See Solmi, *Scritti vinciani*, 42; Marsh, *Renaissance Fables*, 9-10, 311; Marsh, "Aesop and the Humanistic Apologue," 20; Leonardo da Vinci, *Scritti*, Vecce, ed., 72; Cf. also Bisanti, "Leon Battista Alberti, Leonardo e il fior di giglio," 276-91.

Considered in its original context, the fable reflecting on the flower's resistance to the current appears connected to the studies of mechanical forces featured besides it. Curiously, this brief inscription occupies the bottom half of folio 44r, and is surmounted by two diagrams that Marinoni identified with dynamometers.⁶⁸ A dynamometer is a mechanical apparatus for measuring force or power—especially one for measuring mechanical power. Here, Leonardo is indeed proposing a study of forces as shown in the dynamics of the human body. His diagrams precisely represent man's arms drawing weights over pulleys, as clearly outlined by Venerella.⁶⁹ They examine human posture by focusing on the arm's ability to bear weight according to the way in which it is loaded.

Between the diagrams, we see a sketch formally similar to the preceding ones of difficult interpretation and, at the top of the sheet, on the right, the form *amme* ('to me' or 'according to me'). 'According to me' could refer to Leonardo's hypothesis on the measurements indicated beside his diagrams, which are $100 + 100$ in the first drawing, and 150 in the second one. The numbers represent the weights carried by the arms through pulleys. The first drawing shows, in fact, that an arm can draw up to 200 units of weight over two pulleys via cords attached to the fist and the elbow. Each pulley carries a 100 unit weight. The second shows that an arm can draw 150 units of weight over just one pulley via a cord held by the fist.⁷⁰

⁶⁸ Leonardo da Vinci, *I manoscritti. Il manoscritto H*, Marinoni, ed., 12.

⁶⁹ Cf. Venerella, *Manuscript H*, 49.

⁷⁰ Ibid.

On the *verso*, there are drawings of a temporary field pavilion with indications of the central supporting beam and bracing cords. These are accompanied by a detail of a system of paneling between two attachments, labeled *a* and *b*, with the annotations: “Lungo dieci e largo 4 per me” (‘Ten long and four wide, in my opinion’) and “4 teli da posta a posta *a b*” (‘Four panels between position *a* and position *b*’).⁷¹ Then, we have details showing the method of attachments for the preceding, the last of which is labeled “braccia 6” (‘six arms’). These seem to be mere project sketches with pertinent annotations of lesser interest to our argument. According to Charles Ravaisson-Mollien *per me* recalls *amme* written on the preceding page, thus testifying that the sheets are part of the same process of reasoning.⁷²

The multiform nature of the notes that Leonardo gathers on fol. 44 discourages any attempt of their comparative analysis and exhaustive interpretation. In addition, the state of confusion in which the Ms. H has reached us, as Pietro C. Marani has argued, highly complicates our approach to the contents of this manuscript. In fact, the booklet is composed of three distinct notebooks, the second of which was bound upside down, with the first twenty-nine pages of the first notebook inverted.⁷³

⁷¹ Ibid.

⁷² Here are the annotations recorded on 44v: ‘Lungo dieci e largo 4 per me,’ ‘4 teli da posta a posta *a b*’ and ‘braccia 6.’ See Ravaisson-Mollien, *Le Manuscrits de Léonard de Vinci*, 323. Cf. also Venerella, *Manuscript H*, 49.

⁷³ Leonardo’s drawings and writings appear upside down perhaps due to his habit of using the individual notebooks positioned in one sense for a period of time and then in the other for another while. For a complete description of the state of Ms. H see Pietro C. Marani, “Manuscript H,” in *Léonard de Vinci. Dessins et Manuscrits*, Catalog of the Exhibition in Paris at the Musée du Louvre, 5 May through 15 July

My study aims to draw a relationship between some of the contents from Ms. H in order to identify a unifying thread in Leonardo's composition of scientific and artistic drawings and writings on the interaction of natural and mechanical forces. To begin with, the diagrammatic study of forces on folio 44r clearly illustrates a possibility of controlling nature (weight) through artifice (pulleys). This exemplifies Leonardo's dream to reach a physical-mechanical knowledge of nature, as outlined by Romano Nanni.⁷⁴ From this perspective, the diagrams offer a visual representation of a concept expressed in the opening lines of Pseudo-Aristotle's *Mechanica*:

Our wonder is excited, firstly, by phenomena which occur in accordance with nature but of which we do not know the cause, and secondly by those which are produced by art despite nature for the benefit of mankind. Nature often operates contrary to human interest; for she always follows the same course without deviation, whereas human interest is always changing. When, therefore, we have to do something contrary to nature, the difficulty of it causes us perplexity and art has to be called to our aid. The kind of art which helps us in such perplexities we call Mechanical Skill. The words of the poet Antiphon are quite true: Mastered by Nature, we o'ercome by Art.⁷⁵

According to Pseudo-Aristotle, while Nature often thwarts human designs, the science of mechanics offers a way to act contrary to Nature and prevail over her. In this way, lesser forces can win over greater forces. What is striking here is that the fable, on the contrary, illustrates a case in which a small force fails to oppose the greater force of the laws of nature. The fable's moral seems in fact to discourage individuals—such as the lily—to fight against natural laws, because Nature would overcome their effort. Interestingly, Leonardo quoted Aristotle

2003, Françoise Viatte and Varena Forcione, eds. (Paris, 2003), 413-417; Marani, *Foreword*, in Venerella, *Manuscripts H*, V-VI, XIV.

⁷⁴ Cf. Romano Nanni, *Leonardo e le arti meccaniche*.

⁷⁵ Pseudo-Aristotle, *Mechanica*, 847a, 10-25.

repeatedly in his manuscripts, containing “an extensive testimony of his irrepressible passion for mechanics, through the practice and science of the world of machines.”⁷⁶ In addition, he also cited *Problema d’Aristotile* and *Preposizione d’Aristotile* in his list of books, so that we assume that he was well acquainted with Aristotle’s theories, if not precisely with Pseudo-Aristotle’s *Mechanica*.⁷⁷

The relationship between the fable of the lily and mechanical studies is clarified when we put fol. 44r in dialogue with the preceding pages in the manuscript. Within this codex, Leonardo highlighted the value of thirty notations as ‘universal laws’ by assigning them progressive

⁷⁶ Romano Nanni, “Leonardo and the Artes Mechanicae,” in *Illuminating Leonardo: A Festschrift for Carlo Pedretti Celebrating His 70 Years of Scholarship* (1944-2014), Constance Moffat and Sara Tagliagamla, eds. (Leiden: Brill, 2016), 217.

⁷⁷ Marinoni suggests that *Problemata d’Aristotile* and *Preposizione d’Aristotile* could refer to Teodoro di Gaza, *Traductio nova problematum Aristotelis* (Mantua, 1473, repr. 1475, Rome, 1475), Pietro da Albano, *Expositio problematum Aristotelis* (Venice, 1482); *Incipiunt prepositiones universales Aristotelis* (Venice, c. 1475); Theophilus de Ferraris, *Propositiones ex omnibus Aristotelis libris philosophicis* (Venice, 1493); *Incipit prologus de propositionis universalibus Aristotelis* (Bologna, 1488); *Propositiones Aristotelis* (Venice, s.a.); *Propositiones universales extractae ex variis operibus Aristotelis* (s.l. 1478). There is another book in Leonardo’s lists that can be attributed to Aristotle, the *Meteura*. It could refer to *Meteura di Aristotile volgare* (see also Cod. Atl., fol. 97va, Cod. Arund., fol. 190v, 191r; Cod. F, v. cop.). On folio 97va from the Codex Atlanticus Leonardo mentions Aristotle’s *De celo et mondo* (Lipsia s.a). Cf. Leonardo da Vinci, *Scritti letterari*, Marinoni, ed. 250. The name of “Aristotile” appears in Cod. Atl., fols. 266v, 340r, 611a-r, 758r, 785b-v; Cod. Ma. II, fols. 2v, 3r, 24r; Cod. Ar., fol. 190v; Ms. D, fol. 10v; Ms. F, fols. I cop-v, 84v; Ms. I, fol. 130v; Ms. K, fol. 52v; Ms. M, fol. 62r. For a discussion of Leonardo’s relationship with mechanical arts see Chapter Three in this manuscript, and corresponding bibliography. In particular, I refer to the recent publication by Romano Nanni, *Leonardo e le arti meccaniche*. On codex Forster II (fol. 64r), we find a note probably by Melzi’s hand, aiming to reorganize Leonardo’s notes for publication: “Mechanica potissimum. In fine incipiendum” (‘talk about mechanics, overall, in the end.’) My translation. On Pseudo-Aristotle in the Renaissance, see Paul Lawrence Rose, “The Pseudo-Aristotelian Questions of Mechanics in Renaissance Culture,” *Studies in the Renaissance* 18 (1971): 65-104; Paul Lawrence Rose, *The Italian Renaissance of Mathematics: Studies on Humanism and Mathematicians from Petrarch to Galileo* (Genève: Droz, 1975).

numbers executed in ink.⁷⁸ The orderly disposition of universal laws beside scientific observations and fables reflecting on botany is a key feature of the previously examined fol. 207 from Codex Atlanticus. In Ms. H, universal laws refer to the depths, the weight, the form of the bottom and the obliquity of the watercourse in relation to the speeds and behaviors of the current, and the causes of the erosion of the banks and the bottom of the river. Once more, notations of this kind were possibly meant to be reorganized around scientific observations and fables on similar topics, as well as to furnish the key to their interpretation.

Particularly interesting is folio 34r, where Leonardo envisions the arrival of water in the face of different obstacles—such as the river’s tide, sand, stones—and the series of allegorical notes on fame, obedience, envy and fortitude in conjunction with scientific observations on obstacles in the middle of a watercourse on folios 40r-v, 49v, 59v, 60v and 63v. Beneath a sheltered laundry area (or water well) with a cauldron for heating water labeled *per bucati* (‘for laundry’), fol. 43r illustrates precisely the consequences of water’s action on the riverbank through empirical observation (Figure 2-10):

⁷⁸ The major themes of the thirty notations fall into eight categories: the influence of the form of the bottom and of the obliquity of the watercourse upon the speed of the current (1); the equivalence between the weight of a buoyant body and the water displaced by it (2); the influence of the narrowing of a canal upon the direction of the water and upon erosion of the banks or the bottom (3); the varying of velocities and behaviors of water according to varying depths (4); eddies (5); the weight of water upon its bottom (6); the removal or depositing of gravel at the bottom of a watercourse; and the meeting, striking, intersecting of currents (7). Cf. Augusto Marinoni, “Le annotazioni sull’acqua,” in Leonardo da Vinci, *I manoscritti dell’Institut de France. Il manoscritto H*, Marinoni, ed., 137. Marani grouped and discussed other relevant themes in the manuscript dealing with the sciences of optics, perspective, and painting in his appendix. Cf. Pietro C. Marani, “Le fonti del ‘Bestiario’ di Leonardo,” in Leonardo da Vinci, *I manoscritti dell’Institut de France. Il manoscritto H*, Marinoni, ed., 141-153; Venerella, *Manuscript H*, 44, 47, XVII.

Se l'acqua cade e piglia diviso il corso, nel ricongiungersi insieme farà profondità e ruina nell'argine, perché con po<co> retroso.⁷⁹

Both the empirical note and the fable reflect upon the cause-effect relationship that ties the current to the bank, and can be connected with hydraulic works bustling in Vigevano by order of Ludovico il Moro.⁸⁰ At the time when the manuscript was compiled (1493-1494, as noted on folios 38r, 41r, 64v, 65, 105r and 106v), Leonardo was in fact between Vigevano and La Sforzesca, close to Ticino, trying to calculate the estimated cost for digging the Martesana canal.⁸¹ In his projects, Leonardo frequently mentions Ticino, and depicts his interest in its

⁷⁹ Leonardo da Vinci, Ms. H, fol. 43r. "If the water falls and takes on a divided course, when it joins back together, it will produce a depth and cause damage to the bank, because it will have a little eddying effect." Transl. Venerella, *Manuscript H*, 75.

⁸⁰ On one of these pages, I identified what seems be another annotation on the iron (unreported in any published collection of Leonardo's fables): "Il ferro che di continuo riceve la percussione della corrente acqua mai si arrugginisce, anzi si consuma brunendosi" Leonardo da Vinci, Cod. H, fol. 39r. The writing style, the position of the text and the topic show similarities to that of the lily, and the subject is the same as fable 7: "Il pesante ferro si reduce in tanta sottilità mediante la lima, che piccolo vento poi lo porta via." Leonardo da Vinci, Cod. H, fol. 48v; *Scritti letterari*, Marinoni, ed., n. 52. "Heavy iron is reduced to such subtlety by a file that even a slight breeze blows it away." Transl. Marsh, *Renaissance Fables*, 281.

⁸¹ On fol. 38r, Leonardo writes beside a detail indicating the reinforcing supports for individual vines with a vineyard at Vigevano: "Vineyards of Vigevano. On the 20th day of March, 1494. And during the wintertime they are covered with earth." After a rapid sketch of a mill wheel, connected with various devices for communicating motion, he adds: "Where the channel of water narrows, there its bed becomes deeper and it flows more swiftly." This sheet is relevant for several reasons. First, it offers the exact day in which the notes are transcribed. Second, it mentions Leonardo's physical observations on the vine tree and provides a precise sketch of it, which could have served for his fables on the grapes. Third, it refers to the bed of a channel of water that is the protagonist of Leonardo's fable 47: "Il torrente portò tanto di terra e pietre nel suo letto, che fu po' costretto a mutar sito." Leonardo da Vinci, Cod. Ar., fol. 42v; *Scritti Letterari*, n. 40 ("The torrent carried so much earth and gravel into its bed that it was forced to change course." Transl. Marsh, *Renaissance Fables*, 313). The fable is not different from a statement about fluvial hydraulics, as it explains erosion and deposition's effect on the course of a river. Fols. 41r and 65r also contain relevant dates and notes about Leonardo's engineering project on the Martesana canal, and fol. 65v mentions the Sforzesca—the Duke's summer residence at Vigevano. Cf.

constant flow.⁸² Therefore, as Marinoni suggested, the fable of the lily is the result of Leonardo's observation of the Ticino's banks—documented, precisely, on folios 43r, 68r and 127v.⁸³

Few visual references bind folios 43r and 44r together. In both sheets we have sets of drawings representing mechanical interactions of natural and artificial forces. On fol. 43r the mechanical arm of the water well (*force a*) contrasts the weight of the laundry cauldron (*force b*), such as on fol. 44r the human arm opposes the weight. Furthermore, the illustration of the water (*force a*) overcoming the river's tide (*force b*) on fol. 43r is possibly reenacted on fol. 44r in the sketch between the two diagrams on the man's arm drawing weight. This sketch—which Venerella deciphered as a schematic of the preceding arm, extended—might also be interpreted as a schematic of the interaction between the current (represented by the three curvy lines on the left) and the lily (the rhombus shape on the right). The rhombus shape also recalls the structure

Venerella, *Manuscript H*, 44, 47, XVI, XVIII; Roger D. Masters, *Fortune is a River: Leonardo da Vinci and Niccolò Machiavelli's Magnificent Dream to Change the Course of Florentine History* (New York: Free Press, 1998); Roger D. Masters, *Machiavelli, Leonardo, and the Science of Power* (Notre Dame, Indiana: University of Notre Dame, 1996).

⁸² For instance, Leonardo uses Ticino and Martesana as exemplary durable canals on fol. 18r from Codex Leicester: “Nessuno canale, che esca fori de' fiumi, sarà durabile, se l'acqua del fiume, donde nasce, non è integralmente rinchiusa, come il canal di Martigiana, e quel, ch'escie di Tesino” Leonardo da Vinci, Cod. Leicester, fol. 18r. Other examples of Leonardo's admiration for the Ticino can be found in Ms. B, where Ticino is defined as a beautiful river that is never torpid (Leonardo da Vinci, Ms. B, fol. 37v).

⁸³ In his critical edition of Leonardo's literary writings, Marinoni adds a note on the fable of the lily that refers to the dating of the fable, and to Leonardo's occupation at the time (Leonardo da Vinci, *Scritti letterari*, 93). Marinoni is an exception to the critics who ignore the manuscript's context. My analysis builds upon this isolated contextual observation and takes each sheet of Leonardo's manuscripts as an organic unity, regarding everything that concerns them and each note on the folios as equally relevant.

of tie beams, confirming a correspondence between the model of the natural picture and that of Leonardo's engineering projects (Figure 2-11).⁸⁴

Folio 68v joins the group of sheets on the mechanical interactions of forces by connecting a universal law on water to the diagrammatic study of the causes and consequences of the current on the riverbanks. Law 23 titles the page:

23. L'acqua che preterisce l'universal profondità e larghezza de' fiumi, si muove in contrario moto.⁸⁵

Here, Leonardo draws an overhead view of a watercourse to one side of which an eddy has produced an inlet. Then, we have a sectional view of the watercourse traversed by the analytical diagonal *a—b*, with emphasis on the rising of the damaging waves against the banks (Figure 2-12). The caption—which is, curiously, a later addition⁸⁶—explains:

L'onda dell'acqua fia alta in fra la causa del moto e 'l suo fine.⁸⁷

Close to the end of the manuscript, we encounter the rarely discussed folio 127, which likely relates to the same process of reasoning. On the recto, there are two versions of a tumultuous

⁸⁴ My hypothesis was confirmed during the discussion of my observations with professor Paolo Galluzzi at the Museo Galileo in Florence on June 11 2015.

⁸⁵ Leonardo da Vinci, Ms. H, fol. 68v. "23. The water that surpasses the universal depth and breadth of rivers moves in contrary motion." Transl. Venerella, *Manuscript H*, 74.

⁸⁶ The caption is, in fact, written in black ink—and not in red chalk as the precedent notation—on the left side of the folio in a manner that is also documented elsewhere in the manuscript.

⁸⁷ Transl. Venerella, *Manuscript H*, 75.

torrent of water, accompanied by a rough series of ellipses with a common focus on a round body, and illegible writing (Figure 2-13).⁸⁸

On the verso, the bend in a river, at which an inlet gathers water—or perhaps a diagrammatic drawing of falling water encountering an obstacle—is labeled *a* and *b* (Figure 2-14). Below it, the writing: “*a è più veloce che b*” (‘*a* is swifter than *b*’),⁸⁹ and the front view is of the hedge of a torrent. On the top of the folio, Venerella sees a drapery in the lower portion of the gown, gathered at the center—considered an enigmatic figure in previous commentaries. I would suggest turning the sheet upside down, and propose to interpret the enigmatic drawing as the former study of the lily on the riverbanks. This picture, in which is clearly visible the broad corolla and extended pistils, has in fact all the characteristic of a still-life drawing of a flower, apparently belonging to the *Lilium* genus (i.e. *lilium candidum*, *martagon*, *bulbiferum*). Consequently, the notes and sketches surrounding the picture might be interpreted as Leonardo’s still-life studies of the current dragging away the lily on the banks of Ticino—in the *momentum* recalled by Marinoni as inspirational in fable 41 (Figure 2-15).⁹⁰

The fable, aimed to warn the individual against opposing natural forces, is the point of juncture between Leonardo’s studies of Aristotelian mechanics and his empirical observations

⁸⁸ According to Venerella (*Manuscript H*, 132) both readings of Ravaisson-Mollien and Marinoni are inconclusive.

⁸⁹ My hypothesis was confirmed during the discussion of my observations with professor Paolo Galluzzi at the Museo Galileo in Florence on June 11, 2015.

⁹⁰ Cf. Leonardo da Vinci, *Scritti letterari*, Marinoni, ed., 93).

on the Ticino's river. The unavoidable transition from scientific theory to experience is beautifully outlined in a memo that Leonardo writes for himself on fol. 90r, also in Ms. H:

Ricordati, quando commenti l'acqua, d'allegar prima la sperienza e poi la ragione.⁹¹

Arguably, Leonardo tested Aristotle's theories according to his experience on the Ticino's banks, and used the fable of the lily to illustrate the cases in which mechanics cannot overcome Nature. Nonetheless, the fable of the lily is not just a moral parable born from Leonardo's natural observations and his reflections on the laws of mechanics. Indeed, the topic of the lily overcome by water held much greater interest for Leonardo, who even creates an emblem from it. The emblem, found in Windsor RL 12,700v, summarizes in both words and images the irrationality of fighting Nature.⁹²

The sheet from the Royal Collection of Windsor is dated 1508-1510 and has never been connected with Ms. H. However, the correspondences between the two manuscripts are so striking that we might lean toward a dating back of the Windsor sheet to Leonardo's Vigevano period, when the fable of the lily was written (1493-1494). Nevertheless, as I would suggest

⁹¹ Leonardo da Vinci, Ms. H, fol. 90r. "Remember, when you make comments about waters, to cite experience first and then the reason." Transl. Venerella, *Manuscript H*, 96.

⁹² Cf. Carlo Pedretti, *The Drawings and Miscellaneous Papers of Leonardo da Vinci in the Collection of Her Majesty the Queen at Windsor Castle*, vol. I (1982): *Landscapes, Plants and Water Studies*, vol. II (1987): *Horses and Other Animals*, cat. 393. See Bambach, *Leonardo da Vinci: Master Draftsman*, 574, for relative literature: Richter 1883, vol. 1, 356-57 nos. 684-85, pl. 63; Berenson 1903, vol. 2, 62, no. 1121; Seidlitz 1911, 289, nos. 848, 849; Solmi 1921, 509, no. 2; Commissione Vinciana 1928-, vol. 5, 22, pls. 193, 194; Bing 1937-38, pl. 47c; Berenson 1938, vol. 2, 124, no. 1121; Giglioli 1944, pl. 134; Reti 1959, 42-54, pl. 7; Berenson 1961, vol. 2, 220, no. 1121; Clark and Pedretti 1968-69, vol. 1, 177-79, no. 12700; Richter 1970, vol. 1, 388-89 nos. 684-85, pl. 63; Gentile 1980, 163-68; Kemp 1981, 281-82, pl. 77; Pedretti 1982a, 92, 114-15, pls. 67, 99-100; Kemp 1989a, 244-45; Caroli 1991, 104; Popham 1994, no. 113v; Clayton 1996-97, 109, no. 59.

according to the style of the sketches and the *ductus*, we should interpret the emblem as the final stage of a long-term creative project pertaining to Leonardo's fables.⁹³

The upper part of the folio is occupied by diagrams and two explanatory notes on geometry (Figure 2-16). On the left side, a drawing of a flower standing above the river's tide is accompanied by the motto: "prima morte che stanchezza" ('death rather than weariness'). On the right, near the center of the sheet, we read: "prima privato di moto che stanco di giovare" ('may I be deprived of movement, before I tire of being useful'). Below that, there are a series of numbers (7 2 6 13), followed by the final motto: "mancherà prima il moto che 'l giovamento" ('movement will fail sooner than usefulness').⁹⁴ The drawing of the flower, already identified by

⁹³ The dating of the Windsor sheet generates some disagreement between scholars. Bambach compares the expressive figural sketches to the thumbnail sketches of figures for the Trivulzio monument from 1508-1512. Drawings dated from the 1470s until Leonardo's death in 1519 can be connected to the allegorical sketches' subject matter. According to Kenneth Clark and Carlo Pedretti, the paper, handwriting, ink, and diagrams of geometry confirm a dating to 1508-9, and various comparisons can be made to the Codex Atlanticus, the Paris Ms. K, the Codex Arundel and the Codex Leicester. Landislao Reti connects the emblems to Cesare Borgia, Leonardo's employer in 1502-3. However, A.E. Popham dates the drawings of allegories and emblems to 1498. See Bambach, *Leonardo da Vinci: Master Draftsman*, 571; Arthur E. Popham, *The Drawings of Leonardo da Vinci*, 1945 (London: Pimlico, 1994); Ladislao Reti, "Non si volta chi a stella è fisso: Le imprese di Leonardo da Vinci," 7-54. An interesting comparison can also be made with a British Museum sheet of 1478-81 (fols. 1886-6-9-42), showing an allegory with Fortune.

⁹⁴ Here is the entire transcription: "prima privato di moto che stanco / di giovare. // 7 2 6 13 // mancherà prima il moto che 'l giovame<n>to. // prima morte che stanchezza___ [emblem on the left A] // no<n> mi sta<n>co nel giovare / è motto da carnovale. // insaziabile servitù. // prima sta<n>cho chesso / sia di servire // no<n> mi satio di servire. // tutte le op<e>re no<n> so<n> p<er> instancarmi. [emblem on the left B] // sine lassitudine [emblem at center] non mi stanco nel giovare. // mani nelle quali fio<cca> ducati e pietre p<r>e<tiose>, queste mai si sta<n>/cano di servire ma / tal servitio es sol p<e>r sua utilità e non e al no<stro> proposito / naturalme<n>te / natura così mi dispone // sine labore // sine lassitudine." Leonardo da Vinci, RL 12700v, in Bambach, *Leonardo da Vinci: Master Draftsman*, cat. 110. "Movement will cease before we are / weary / of being useful. // 7 2 6 13 // movement will fail sooner than usefulness. // death sooner than weariness___ [emblem on the left A] // I am never weary of being

Bambach as a lily (an *Iris fiorentina*, according to Vecce), is inscribed in an oval with a scroll at the bottom in the manner of Renaissance *imprese* and seems to be the visual summary of the fable of the lily (Figure 2-17.a).⁹⁵ In fact, the fable is composed of two coordinate clauses following the cause-effect model: the lily (*force a*) stands before the waves (*force b*), and she is immediately overwhelmed. The allegorical drawing reenacts a visual depiction of the fable with a corresponding scheme, showing the flower standing upright and then bowing down.

Just below the drawing under consideration, turning back to the right hand side of the sheet (as Leonardo writes from right to left), the artist draws the same motif beside a mechanical device and the motto “non mi stanco nel giovare” (‘I never weary in being useful’) (2-17.b). Then we have a tiny sketch of what seems to be an explosion (a burning insect?), or perhaps the second moment of the fable, that is, the arrival of the wave tearing down the lily (2-17.c). More important is what follows the sketch: two circular shapes in which the same subject is developed (Figures 2-17.d and 2-17.e). In both these drawings we see the lily standing (on the left) and bowing down (on the right), with the motto “sine lassitudine”

useful, in serving others I / is a motto for carnival. // ~~cannot do enough~~. // no labor is sufficient to tire me. [emblem on the left B] // without fatigue [emblem at center] I am never weary. of being useful. // hands into which ducats and precious stones fall like snow; they never become tired by serving, but this service is only for its utility and not for our own benefit // naturally nature has so disposed me. // without labor // without fatigue.” Modified transl. Richter, *The Notebooks*, vol. 1, 356-57, cat. 684-685, pl. 63; repr. 1970, vol. 1, 388-89, cat. 684-85, pl. 63.

⁹⁵ In describing the Windsor drawing, Berenson talks about diagrams of cameos containing emblems and single figures. According to him, at least two of them are inspired by the ancients. See Bernard Berenson, *The Drawings of Florentine Painters Classified*, 2 vols. (1903, repr. Chicago, Illinois: The Chicago University Press, 1938), vol. 2, 124, cat. 1121. Cf. Bambach, *Leonardo da Vinci: Master Draftsman*, cat. 110; Vecce, “Word and Image in Leonardo’s Writings” in *Ibid.*, 67.

(‘without fatigue’) underneath. In the second one the motto is placed in the scroll, and accompanied by a new notation: “tutte le op<e>re non so<n> p<er> instancarmi” (‘no labour suffices to tire me’), for one could think it represents a later stage in the process.⁹⁶ On the bottom right corner of the folio the motif of the lily is repeated again with the motto “sine lassitudine.” In this case, the drawing is particularly refined: Leonardo uses a sharp sign and shading techniques. He also includes charming details—such as the beautiful landscape with mountains in the background and the twirling waves in the foreground. These unfold at the flowers feet and transform into the emblem scroll (2-17.f).

Intriguingly, the waves-scroll is the extension of two of the flower’s leaves: the lily and the water assimilate to become one single element in motion. It is the instant of a movement fixed on paper. After some sketches on a different subject (defined by Venturi as a masquerader’s costume), Leonardo repeats the drawing of the lily another three times, exploring different solutions for depicting the arriving waves (2-17.g-h-i). The last drawing on the left corner again shows the waves, but the flowers are transformed into two hands slightly opened, which are receiving coins coming down from a cloud in the sky (2-17.l). An explanatory note completes this peculiar sketch:

⁹⁶ On the verso there are some other geometrical studies and drawings and notes on truth (*verità*) triumphant over falsehood (*bugia*), which is represented by a mask. See Vecce, “Word and Image in Leonardo’s Writings” in Bambach, *Leonardo da Vinci: Master Draftsman*, 67-68.

non mi stanco nel giovare / mani nelle quali fio/cca ducati e pietre p<r>e/tiose, queste mai si
sta<n>/cano di servire ma / tal servitio e sol p<e>r sua utilità e non e al no/stro proposito /
naturalme<n>te / natura così mi dispone / sine labore / sine lassitudine.⁹⁷

Leonardo reflects on the differences between works commissioned by a patron—which are source of monetary reward—and a task (*servitio*) that is induced by natural laws. He is apparently divided between the necessity to please a patron as part of his profession and his individual search to “understand the created universe.”⁹⁸ The notation has all the features of a personal message in which Leonardo accuses the contradictions of his courtly submissions in the face of his moral commitments. This cryptic caption ostensibly undervalues activities that are motivated by the necessity of earning and situates Leonardo’s work in accordance with the workings of Nature. A similar significance is emphasized in most of Leonardo’s fables, including the fable of the lily. Nature assigns to her creatures a duty that they can accomplish only by accepting their condition and not trying to exceed natural limits. Individuals must live in the place assigned to them by Nature, as she provides what they need. Accordingly, the lily should not have tried to hold against the current. Rather, it should have bowed down before the power of Nature.

The eight sketches of the flower erect and bent on the bank can be viewed either as emblems deduced from the fable of the lily, or as a visual sequential narrative on the topic. The

⁹⁷ Leonardo da Vinci, RL 12700v, in Bambach, *Leonardo da Vinci: Master Draftsman*, cat. 110. For the translation of the passage, see note 82.

⁹⁸ Zwijnenberg, *The Writings and Drawings of Leonardo da Vinci*, 8.

sequence of emblems shows the recurring motif of the lily's stalk, represented in each drawing by a straight line and a curve, and the gradual changes in shape and location of the river's waves.

In order to study the recurring and changing motifs in the sequence of the emblem of the lily, I applied to each image of the lily a diagrammatic procedure which I developed (Figure 2-18). The procedure is composed of four stages. In the preliminary stage, I isolated the first image of the emblem (Im. 1), and highlighted with green lines the position of the lily's stalk, and with blue lines the evolution of the river waves into the scroll. In the second stage, I layered on this image (Im. 1 and its lines) the second image of the emblem (Im. 2), tinted with a blue hue. In the third stage, I highlighted with green lines the position of the lily's stalk, and with blue lines the evolution of the river waves into the scroll on the layered images. In the fourth stage, I isolated the diagrams created by the lines highlighted in both of the images.

I focused on the images where the emblem of the lily is at a more developed stage, following the order in which each image appears in the manuscript (from right to left). Initially, I isolated the first image, and layered it onto the second, and created a diagram of their lines. Then, I isolated the second image, and layered it with the third, and created the respective diagram. Finally, I layered all the diagrams and created a synthetic model. The model shows that the straight lines and the curves representing the stalk maintain the same position and inclination in each diagram. The lines representing the waves vary in their position and concentrate on the bottom right of the diagrams.

By examining the diagrammatic sequence, one can draw further conclusions. In two images (Im. 1 and Im. 3), the scroll is a single line (*i*); however, in the majority of them, the scroll is composed of two distinct elements (*i* and *ii*). The first element (*i*) always occupies the upper part of the image, and the second element (*ii*) goes below, at the feet of the lily, where Leonardo plans to put the writing explicative of the emblem (or *motto*). The superimposition of the lines of each drawing shows the recurring motif of the stalk, which is always standing and bowing down in the same way, and occupies the same position in the oval.

Additionally, the model reveals that the changes in shape and location of the river waves develop with a kind of consistency. In fact, the waves concentrate, alternatively, on the right (Im. 1, Im. 3, and Im. 5) and on the left of the images (Im. 2 and Im. 4). Ultimately, the last image (Im. 5) is the only case in which the lily's stalk appears in three different positions that illustrate three different moments in its bowing down. Furthermore, the waves occupy the lower right of the image in multiple intertwined lines. In one case, the line illustrating the stalk bowing down coincides with that of a wave. This image is arguably the last of the process because it shows unique delicacy and refinedness of the sign. Furthermore, it better summarizes the scheme of causes and effects at the basis of the fable and the emblem of the lily.⁹⁹

⁹⁹ Leonardo already drew a stalk of a lily with a head of flowers in 1475. Because it is pricked for transfer, the paper should be considered as a preparatory drawing. In this respect, the motif can be connected to Leonardo's *Annunciation* at the Uffizi (1472-75), even if the composition is slightly different. The sophisticated treatment of the flower's stalk and petals in pen, ink and black chalk, and the coloring in ochre wash with white heightening display the quality of a finished illustration, likely to be devoted to a collection of floral designs or *herbarium*. On the bottom half of the sheet we see a series of parallel lines accompanied by diagonals converging to a point, and a dense gathering of curvy parallel lines in

Both the fable and the emblems suggest the necessity for the individual to serve Nature.

All the inscriptions on the Windsor folio allude similarly to the virtues of constancy and loyal service of Nature.¹⁰⁰ As already mentioned, the artist also addresses the theme of obedience in Ms. H, where the fable of the lily is transcribed.¹⁰¹ The unity of themes between Ms. H and the Windsor drawing emphasizes the connection between the fable and the emblems. This would support that the fable served as a preliminary stage in the process of creating the emblem. However, the fable is too complex and polished in structure to be considered just as a side note.

proximity of the lily stalk. These can be geometrical studies of perspective, as Pedretti observed, but they also recall both the diagrams from manuscript H and the complex of lines outlining the lily stalk in the emblem from the Windsor Collection. Therefore, this botanical drawing can be considered, along with natural observations on the Ticino's bank and studies of mechanical forces, as one of the possible visual aids for the creation of the fable and the emblems of the lily. Cf. Pedretti, C., *The Drawings and Miscellaneous Papers of Leonardo da Vinci in the Collection of HM The Queen at Windsor Castle*, Vol. I (1982), *Landscapes, Plants and Water Studies*, pl. 2.

¹⁰⁰ According to Carmen Bambach, these notations refer to Leonardo's service to a patron (Bambach, *Leonardo da Vinci: Master Draftsman*, 574). Developing my interpretation that leads to the connection of the set of emblems to the fable of the lily, I would suggest that the notations represent a comparison between serving human patrons as opposed to serving nature. In fact, Leonardo's statement "tal servizio essol p<e>r sua utilità e non e al no/stro proposito" represents, indeed, the praiseworthy service of Nature, which is useful *per se*. Because Nature has prepared her creatures for this service, they can fulfill it naturally, "sine lassitudine." At the same time, Leonardo condemns the service of a patron as a work that has the only purpose of making profit, and no universal value. The allegorical drawing and note on fol. 63v from Ms. H illustrate an interesting scene in this respect. A drawing of a bird flying overhead, beneath which a hunter with his hunting dog releases a bird, is captioned: "Corta libertà. Il caderigio dà il tortomalo a' figlioli ingabbiati—Prima morte che perdere libertà." Leonardo da Vinci, Ms. H, fol. 63v. ("Short Liberty. The goldfinch gives spurges to its young when they are caged.—Death rather than loss of liberty." Transl. Venerella, *Manuscript H*, 69.) The last sentence of the caption recalls the motto "prima morte che stanchezza" ('death rather than weariness'), supporting the reading of the allegory of the lily as referred to works conducted under commission of a patron. Cf. Introduction of Chapter Three for the discussion of this *motto* in relation to Leonardo's fable of the thrushes (*fab.* 35.)

¹⁰¹ For instance, on fol. 40v the artist draws a dog carrying a message with a label saying: "per non disubbidire" ('not to disobey').

What is certain is that the two artistic expressions of the fable and the emblem are examples of writing conceived within a visual context, and form part of the same artistic enterprise. Eventually, and in the case of the emblem in particular, the evolution of the narrative is shown through the re-elaboration of recurrent elements pertaining to the scientific, literary, and artistic fields, according to principles of addition and reiteration, which involve the entire space of the page.

2.2.2. *Spiders*

Leonardo's re-elaboration of recurrent textual and visual elements in both creative and scientific projects is clearly illustrated in the evolution of the fables and the emblems of the spider. The spider features in four different fables by Leonardo, who is the first fable-writer to confer a prominent place to this neglected insect, highlighting various traits of his behavior in face of multiple situations.

Curiously, in the fable tradition, the spider is never treated as the main subject. Aesop's fable 188 tells us about the spider that sucks the fly as punishment because she tried to compete with the lion. Here, the spider is defined as the meanest insect in comparison to the greatest animal, which is the lion. The spider is also quoted in Leon Battista Alberti's *Musca* and in the last chapter of his *Liber Intercenaliū Decimus*, entitled, fittingly, *Aracnea*. Similarly to Aesop, Alberti describes the spider as a malicious character: "pusillum et minime extimationis ac nullius preti animal" ('a tiny animal, of little account or value'); "araneam abiectissimam" ('a

lowly spider’); “ignominiosissimam aranee amicitiam;” (‘the most disgraceful friendship is that with a spider’).¹⁰²

Leonardo’s characterization of the spider takes place first in his own bestiary, recorded in Ms. H, where he writes:

RAGNO. Il ragno partorisce fori di sè l’artifiziosa e maestrevole tela, la quale gli rende per beneficio la presa preda (*best.* 8.)¹⁰³

The insect is an expert artisan, whose masterful product (the web) rewards it with good prays.¹⁰⁴

Sources for this passage have yet to be ascertained—thus, it is considered original by Leonardo, as Giuseppina Fumagalli has argued. However, a couple of Leonardo’s library sources provide interesting elements with regard to this bestiary entry.

The relationship cause-effect between the spider’s sewing its fine web and the capture of flies is similarly outlined in Cecco d’Ascoli’s *L’Acerba*, owned by Leonardo:

Tesse sottile sì, che non conosca
Ciascun animale piccolo che vola,
Ma sua nemica propria è la mosca:
Poi che s’imbatte nella cieca rete,

¹⁰² Alberti, *Apologi*, 136.

¹⁰³ Leonardo da Vinci, Ms. H, fol. 17v; *Scritti Letterari*, Marinoni, ed., n. 58. “SPIDER. The spider produces forth from itself the cunningly masterful fabric, from which it receives back, as a benefit, the prey that it captures.” Transl. Venerella, *Manuscript H*, 21. For the numbering of Leonardo’s bestiary entries, I refer to Richter, *The Notebooks*.

¹⁰⁴ Marani, “Le fonti del ‘Bestiario’ di Leonardo,” in Leonardo da Vinci, *I manoscritti dell’Institut de France. Il manoscritto H*, Marinoni, ed., 142. Cf. also Richter 1883, n. 1242b, II, 325 [1970, II, 268]; De Toni 1922, 72; Fumagalli 1943, 223; Marinoni 1952, 103; MacCurdy 1956 [1977, II, 431]; Marinoni 1974, 106; Pedretti 1977, II, 263.

Battendo l'ale, canta nuova fola:
Prima lo capo prende, com' vedete.¹⁰⁵

Among Leonardo's books, Pliny also refers to the spider's sewing with skillful mastery ("con nobile arte") and the marvelous nature of the web where it hides, so that you cannot see if it is there or not ("se ve o se non ve"):¹⁰⁶

Comincia dal mezo a texere mettendo la trama nela tela ordita in forma tonda et fa le magle sempre con pari intervalli: e quei dipoi crescono dilatandosi dal centro et quegli con indissolubile nodo lega. Con quanta arte occultano e lacciuoli nella tonda arte per pigliare le mosche che intorno s'aggirano. Ne pare che per questo sia ordinata sì densa tela et essa forma del texuto per se medesima con certa ripulitura d'arte tenace.¹⁰⁷

Contrary to Leonardo's bestiary and library sources, his fables show that the spider's mastery in building its web does not have any positive outcome. The spider is the protagonist of fable 12—a quite long text in comparison to the others in the collection. This fable is located on fol. 188v of the Codex Atlanticus, dated at 1515, which features ten fables orderly organized one after the other in two columns:

Trovato il ragno uno grappolo d' uve, il quale per la sua dolcezza era molto visitato da ave e diverse qualità di mosche, li parve avere trovato loco molto comodo al suo inganno. E calatosi giù per lo sottile filo, e entrato nella nova abitazione, lì ogni giorno, facendosi alli spiraculi fatti dalli intervalli de' grani dell'uve, assaltava, come ladrone, i miseri animali, che da lui non si guardavano. E passati alquanti giorni, il vendemmiatore còlta essa uva e messa coll'altre,

¹⁰⁵ Cecco d'Ascoli, *L'Acerba*, cap. 37, 230.

¹⁰⁶ Pliny, *Historia Naturale*, XI, xxiii, 77v.

¹⁰⁷ Ibid. Cf. the Latin text also: "Texere a medio incipit, circinato orbe subtegmina adnectens maculasque paribus semper intervallis, sed subinde crescentibus, ex angusto dilatans indissolubili nodo implicat. Quanta ante celat pedicas, as scutulato rete grassantes! Quam non ad hoc videtur pertinere crebratae pexitas telae, et quam politurae arte, ipsa per se tenax ratio tramae." Plin., *Nat. Hist.*, XI, xxviii, 1045.

insieme con quelle fu pigiato. E così l'uva fu laccio e' nganno dello ingannatore ragno, come delle ingannate mosche (*fab. 12.*)¹⁰⁸

Here, the spider is depicted as a deceptive brigand who attacks the poor flies and, subsequently, is captured in his own trap: the grape-picker picks the spider together with the grapes. Furthermore, the spider's crime is underlined on a linguistic level through terms belonging to the semantic field of deception, which are repeated and condensed in the moral of the fable: "Thus the grapes proved a snare and a trick both for the tricky spider and for the flies it had tricked."¹⁰⁹ On the same page, we find another fable of the spider:

Il ragno, volendo pigliare la mosca con le sue false rete, fu sopra quelle dal calabrone crudelmente morto (*fab. 17.*)¹¹⁰

The one-line fable 17 tells us about a spider that tries to catch a fly again, but it gets killed by the hornet in its own web. Through the definition of the spider-web as 'false,' the spider is characterized as 'deceitful' for the second time.

More interesting is the fable 45 on fol. 42v of the Codex Arundel, which appears to be the development of fable 12—the first version illustrating the encounter between the spider and the

¹⁰⁸ Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti Letterari*, Marinoni, ed., n. 14. "When a spider found a cluster of grapes whose sweetness attracted many bees and various kinds of flies, it seemed to have found a place well suited to its trickery. So lowering itself on its subtle thread, it entered this new dwelling. Each day it hid in the openings formed by the spaces between the grapes, and like a brigand assaulted the poor creatures who failed to guard against it. After several days, the vintner harvested these grapes with the rest, and the spider was crushed with them. Thus the grapes proved a snare and a trick both for the tricky spider and for the flies it had tricked." Transl. Marsh, *Renaissance Fables*, 283.

¹⁰⁹ Ibid.

¹¹⁰ Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti Letterari*, Marinoni, ed., n. 19. "The spider tried to catch a fly in its false webs, but it was, amid them, cruelly slain amid them by a hornet." Transl. Marsh, *Renaissance Fables*, 278.

grapes. Fable 45 is part of another series of literary texts that was probably compiled after the one in the Codex Atlanticus. In this case, the writing is disposed in three columns devoted to fables and prophecies. Long lines follow each text: they indicate the text's conclusion. Therefore, fable 45 can be considered a more definitive version than fable 12.

In this case, we have a limited context, and no reference to 'deceit.' However, the two epigrammatic sentences that compose the fable convey the same concept:

Quel medesimo: il ragno, stante infra l'uve, pigliava le mosche che in su tale uve si pasceva<n>. Venne la vendemmia, e fu pesto il ragno insieme coll'uve (*fab. 45.*)¹¹¹

Leonardo's fables of the spider and the grape, 12 and 45, end with almost the same words: "insieme con quelle [l'uve] fu pigiato,"¹¹² and "fu pesto il ragno insieme con l'uve."¹¹³ Thrice the spider is accused of being deceitful and of choosing the wrong place for its web—that is, in two cases, the vineyard.¹¹⁴

The last version is the fable of the spider and the keyhole, in which the insect chooses again a bad place for its web:

¹¹¹ Leonardo da Vinci, Cod. Ar., fol. 42v; *Scritti Letterari*, Marinoni, ed., n. 38. "The same thing: the spider hidden among the grapes caught the flies that fed there. But at harvest time, the spider was crushed together with the grapes." Transl. Marsh, *Renaissance Fables*, 278.

¹¹² Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti Letterari*, Marinoni, ed., n. 14.

¹¹³ Leonardo da Vinci, Cod. Ar., fol. 42v; *Scritti Letterari*, Marinoni, ed., n. 38.

¹¹⁴ Curiously, in Leonardo's fables, the vineyard is always the ideal antagonist of those who try to deceive nature. According to Augusto Marinoni: "l'infelice protagonista non fa che obbedire alla natura che gli impone di vivere uccidendo e divorando le mosche; la sua vera colpa è quella di non aver previsto il destino dell'uva ed evitato perciò una pericolosa compagnia" Leonardo da Vinci, *Scritti Letterari*, Marinoni, ed., 50.

Il ragno, credendo trovar requie nella buca della chiave, trova la morte (*fab. 52.*)¹¹⁵

The use of the verb *credendo* implies that the spider made a false assumption—it did not foresee the consequences of choosing an unusual place for its web. Therefore, it apparently deserves its retribution because of its naïveté. We should also note that in this particular case the predator insect is looking for rest (*requie*). This means that it is not even assolving spiders’ natural duty of weaving their webs. As a result, it can also represent individuals who consume themselves in idleness. Furthermore, the word *requie* strikingly contains the spider’s destiny: from the Latin *requiem*, it means ‘death.’

In all these fragments, the spider is depicted as a creature who is continuously wrong because it tries—either purposefully or naïvely—to overcome natural laws as a consequence of its arrogance or lack of foresight.

What the fable of the spider and the keyhole actually adds to our discourse is some more context. In fact, this fable is not part of a catalogue of literary texts but it is, instead, transcribed on a sheet full of mathematical sketches, fol. 820v of the Codex Atlanticus (Figure 2-19). Particularly, we can distinguish a series of geometrical studies on triangles, calculations of the height of a pyramid, and a project of an excavating machine, along with two sketches of a wavy pattern and a conical valve. The fable appears to be a later side note entered on the lower left corner of the page. Just above it, there are two delicate sketches related to the text. In the lower

¹¹⁵ Leonardo da Vinci, Cod. Atl., fol. 820r; *Scritti Letterari*, Marinoni, ed., n. 33. “The spider, thinking to find rest in the keyhole, found death instead.” Transl. Marsh, *Renaissance Fables*, 313.

picture, we see an open rectangular door and, on it, what seems to be a padlock. The door is inscribed in another rectangular shape with a hole on the left, with the spider approaching it. The second drawing shows an elegant key adorned with a ribbon, and the spider on top of it. The insect is rendered with a black spot, which could represent the keyhole as well. The two sketches are arguably the project of an emblem about the spider and the key, with the ribbon being the scroll.

On the *recto*, at the top, surrounded by other studies of geometry, we find a sentence about experience that could have served as inspiration for the fable: “Chi si promette dalla sperienza quel che non è in lei, si discosta dalla ragione.”¹¹⁶ As Edmondo Solmi observed, Leonardo does not see any contradiction between what is real according to reason and what is real according to Nature. The individual fails when he veers far from Nature, tries to control her, and does not respect her laws. This sentence seems to be the title of the sheet, so that it gives a possible interpretation for any subsequent sketch and note. The sentence on experience is followed by the mathematical proposition according to which an angle in a triangle increases by a number of degrees, and the opposite angles decrease by an equivalent number of degrees. The proposition is repeated twice, as applied to a general triangle and then verified in relation to right triangles.

¹¹⁶ Leonardo da Vinci, Cod. Atl., fol. 820r. “Mindless is the one who asks experience what does not reside in it.” My translation.

Both the sentence and the mathematical proposition relate to the fable. Indeed, the death of the spider is a consequence of the fact that it does not rely on experience, and naïvely tries to build its web in a dangerous place, as the sentence at the top makes clear. The rule of the triangle's degrees embodies the same lesson: if a triangle increases one of its angles, it will lose degrees to the other angles. Both the spider and the angle must respect a set of rules: the laws of Euclidean geometry, for the triangle, and the laws of experience, for the spider—which does not acknowledge the function of the keyhole. The fable, the sketches, and the mathematical proposition follow the same binary scheme that illustrates both the causes and consequences of a given situation. Again, we must try not to overcome natural limits—such as in the fable and the emblems of the lily. In both cases, Leonardo tries to interpret empirical observation according to principles of mechanics and, in this case, mathematics and by using literary and artistic tools.

The rest of the sheet is devoted to the calculations of the height of a regular pyramid. Basically, Leonardo tries to solve this problem by building a wax cube and putting a pyramid on top of it: from this little sculpture he then gets to a quadrilateral prism. These are mainly studies on matter resistance aimed to lifting monolithic structures, which I am not trying to sophistically connect to the fable and the emblem in their primary impulse.¹¹⁷ However, I argue that, by featuring on the same page, these two forms of knowledge (scientific and literary-artistic) do influence each other both on the thematic and formal level. Curiously, Giorgio

¹¹⁷ I discussed these technical-scientific drawings with Paolo Galluzzi at the Museo Galileo in Florence on June 11, 2015.

Vasari's *Lives* tells us that Leonardo's experiments with wax were mainly devoted to the creation of little light animals, which he was blowing into the air. One of these tiny animals could have been a wax spider.¹¹⁸

Visual connections that support the interlocking relationship between Leonardo's fields of analysis come to light thanks to a diagrammatic study of recurrent shapes in the folio. A particularly interesting correspondence in shape can be found between the technical drawings of the transformation of the parallelepiped into a cube and those of the padlock and the key above the fable (Figure 2-20). Formal similarities between the sketches for the wax pyramid and for the fable suggest that Leonardo's literary and visual representation of the spider and the keyhole derives from his reasoning on mathematical problems.

Leonardo's comparison between natural laws, experience, and the laws of mathematics is not an isolated case in his work. Around 1499 and 1506, at the time when the considered folios were compiled, Leonardo worked between Venice and Florence. While building up his personal library, he was taking Luca Pacioli's classes on Euclid's *Elementa* and studying Archimedes.¹¹⁹ As documented by Vecce, Leonardo approached the natural science and the theory of painting, as he produced a hundredfold of notes and drawings that had as their unifying factor studies of

¹¹⁸ Cf. Giorgio Vasari, *Le vite de' più eccellenti architetti, pittori, et scultori italiani, da Cimabue, insino a' tempi nostri* (1550, repr. Torino: Einaudi, 1991); Vecce, *Leonardo*, 221-2.

¹¹⁹ Leonardo's interest in getting advancing his mathematical knowledge is well testified in his to-do lists. For instance, on fol. 190v from the Codex Arundel, Leonardo writes "1/3 che numero 5/6?" This note is followed by the memo "multiplicatione delle radici" on fol. 191r. Finally, on fol. 331r from the Codex Atlanticus we have the precise mention of Pacioli's teaching to Leonardo: "impara la multiplicazione delle radici da maestro Luca."

geometry. In 1504, the humanist Pomponio Gaurico celebrates Leonardo's "archimedaeo ingegno," which aimed to emulate the ancient scientists and mathematicians who considered certainty to be based on both reason and experience.¹²⁰

Starting with the premise that both the sheets contain emblems and, in one case, fables, I further suggest a connection between the undefined sketches on fol. 820r from the Codex Atlanticus and those on Windsor RL 12700v (Figure 2-21). Between the emblems of the lily on the Windsor sheet, we see a sketch earlier identified as a masquerader's costume. Below that, there is a small round figure that looks like the illustration of the spider on the key (2-21.a-b). On the right, we have then a small cylinder with what seems an image of a squashed spider and an oval intertwined with branches with sample lines for writing in the middle (2-21.c-d).¹²¹ My hypothesis is that these sketches are studies for an emblem drawn from the fables of the spider and the grape, where the grape branches become the scroll, as do the leaves of the lily.

These drawings also share some formal characteristics by virtue of the three delicate sketches beside the mathematical explanations on triangles on fol. 820r from the Codex

¹²⁰ See Leonardo da Vinci, *Libro di Pittura*, Pedretti and Vecce, eds. Cf. Vecce, *Leonardo*, 252.

¹²¹ The formal qualities of the sketch in Windsor RL 12,700, identified with a masquerade costume, are very similar to that of a half-length old man covered with ivy in RL 12,502, and studies for an ivy dress in RL 12,282. The drawing of the ivy dress is repeated on the back of RL 12,282, accompanied with the writing: "L'edera è di lungha vita" and various studies for emblems and proverbs. The theme of the sheet is, therefore, very close to RL 12700. Precisely, the sketch might be the development of Leonardo's studies of the ivy dress into a masquerade costume on the theme of the vine tree. According to Venturi, the drawing represents, in fact: "un vestito coperto di rami e foglie di vite, di parecchi cespi e foglie acquatiche, anche racchiuse in un tondo a destra." Venturi also identifies the small cylinder with a round box accompanied by a compass. However, my analysis of the sketch in connection with Leonardo's fables shows that the drawing might have several different purposes. See Leonardo da Vinci, *I Manoscritti e i Disegni di Leonardo*, Venturi, ed. vol. 5, 13, pls. 194, 191.

Atlanticus (Figure 2-22). These sketches perhaps represent three scenes from the same fables—from top to bottom: the spider climbing the grape (2-22.a), the grape harvest (2-22.b), and the death of the spider (Figure 2-22.c). My interpretation is confirmed by the dating of both the folios (1494-1501), and by the particular mode of reasoning of Leonardo, who often reworked the same topic on different sheets and at various times and stages.

The reelaboration of the same subject and scenes is particularly evident at the lexical and structural level by the variations in the four versions of the fable of the spider:

*Trovato il ragno uno grappolo d' uve, il quale per la sua dolcezza era molto visitato da ave e diverse qualità di mosche, li parve avere trovato loco molto comodo al suo inganno. E calatosi giù per lo sottile filo, e entrato nella nova abitazione, lì ogni giorno, facendosi alli spiraculi fatti dalli intervalli de' grani dell'uve, assaltava, come ladrone, i miseri animali, che da lui non si guardavano. E passati alquanti giorni, il vendemmiatore còlta essa uva e messa coll'altre, insieme con quelle fu pigiato. E così l'uva fu laccio e' nganno dello ingannatore ragno, come delle ingannate mosche (fab. 12.)*¹²²

*Il ragno, volendo pigliare la mosca con le sue false rete, fu sopra quelle dal calabrone crudelmente morto (fab. 17.)*¹²³

*Il ragno, credendo trovar requie nella buca della chiave, trova la morte (fab. 52.)*¹²⁴

*Il ragno, stante infra l'uve, pigliava le mosche che in su tale uve si pasceva<n>. Venne la vendemmia, e fu pesto il ragno insieme coll'uve (fab. 45.)*¹²⁵

¹²² Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti Letterari*, Marinoni, ed., n. 14. “When a *spider found* a cluster of *grapes* whose sweetness attracted many bees and various kinds of *flies*, it *seemed* to have found a place well suited to its *trickery*. So lowering itself on its subtle thread, it entered this new dwelling. Each day it hid in the openings formed by the spaces between the grapes, and like a brigand assaulted the poor creatures who failed to guard against it. After several days, the vintner harvested these grapes with the rest, and the spider was crushed with them. Thus the grapes proved a snare and a trick both for the tricky spider and for the flies it had tricked.” Transl. Marsh, *Renaissance Fables*, 283. Emphasis mine.

¹²³ Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti Letterari*, Marinoni, ed., n. 19. “The *spider tried* to catch a fly in its *false* webs, but it was, amid them, cruelly *slain* by a hornet.” Transl. Marsh, *Renaissance Fables*, 278. Emphasis mine.

¹²⁴ Leonardo da Vinci, Cod. Atl., fol. 820r; *Scritti Letterari*, Marinoni, ed., n. 33. “The *spider, thinking* to find rest in the keyhole, found *death* instead.” Transl. Marsh, *Renaissance Fables*, 313. Emphasis mine.

In the passage from one draft to another, some words remain unchanged, but assume different forms: *ragno* ('spider' appears 6 times) *uve* – *uva* ('grapes,' 5), *mosche* – *mosca* ('flies,' 2), *inganno* – *ingannatore* – *ingannate* ('trickery,' 4), *pigliare* – *pigliava* ('to catch,' 2) *morto* – *morte* ('death,' 2). Concurrently, other words vary on a lexical level, though belonging to the same semantic sphere: *li parve*, *volendo*, *credendo*, *stante* ('seeming,' 'trying,' 'thinking,' 'being'), and *laccio*, *morto* – *morte*, *pigiato*, *pesto* ('snare,' 'slain,' 'death,' 'crushed'). A second type of variation is characterized by the insertion of new phrases that define the setting more precisely, and by the change in word order that switches focus on some elements rather than others. Leonardo reworks a fixed structure with slight variations in each version of the fable. In this way, the unitary reading of the versions reveals the evolution of the scene, and defines the complexity of the spider's character.¹²⁶

In fable 12 the spider is a naïve creature, which dreams up a utopian scheme: by constructing its existence on imagination, it is punished by its own actions. In fable 17 the spider pursues its desire without envisioning all the consequences. In fable 52 it is a docile character that seeks peace and quiet. And in fable 45 the spider is not characterized at all but simply

¹²⁵ Leonardo da Vinci, Cod. Ar., fol. 42v; *Scritti Letterari*, Marinoni, ed., n. 38. "The same thing: the *spider* hidden among the *grapes* caught the *flies* that fed there. But at *harvest* time, the *spider* was crushed together with the *grapes*." Transl. Marsh, *Renaissance Fables*, 278. Emphasis mine.

¹²⁶ Cf. Cirnigliaro, "Le Favole di Leonardo da Vinci," 36-38; Vecce, and Cirnigliaro, *Leonardo: favole e facezie*, 26-28, Richter, *The Literary Works*, n. 1270-75; Bongioanni, 226-27; Marinoni, *Scritti letterari*, 49, 93; Leonardo da Vinci, *Scritti*. Carlo Vecce, ed., 269-312; Marsh, *Renaissance Fables*, 21; Bambach, *Leonardo da Vinci: Master Draftsman*, 59-77; Galluzzi, 217-18; Brizio, 112; Carlo Pedretti, *The Codex Atlanticus of Leonardo da Vinci. A Catalogue of its Newly Restored Sheets* (New York: Johnson Reprint Corporation, 1978-79) vol. 1, 93; Pedretti, *The Literary Works*, vol. 2, 286-87.

defined as “*stante infra l’uve*” (‘standing among the grapes’). My interpretation of the sketches on the Windsor drawing RL 12,700v as illustrations of the fable of the spider and the grape is supported by the similarity in the structure of the text and the drawings, developed in a sequential narrative.

As Barkan has observed, Leonardo was a thinker who aspired to the kind of systematic investigative processes that would eventually produce experimental science.¹²⁷ Through comparative analyses of visual and textual material gathered on his sheets, I illustrated the different stages of his investigative process. First, Leonardo progressively connects principles of mechanics and mathematics (such as dynamometers and laws of triangles) with empirical observations (the river current and the grape harvest). Subsequently, he uses fables and emblems to interpret scientific theories and observations, and produce new conclusions. Searching for the causes of Nature with all his means, Leonardo is able to transfer his knowledge through a process that he conceived: the verbal and visual enunciation of a principle of mechanics and mathematics in connection with scientific observation, followed by literary writings and interpretive illustrations—particularly, fables and emblems.

¹²⁷ Barkan, *Michelangelo: A Life on Paper*, 12.

2.3. Chasing Leonardo's Fables in Late Cinquecento *imprese*

2.3.1. *Butterflies*

The analysis of Leonardo's reworking of the emblem and the fable of the spider and the vineyard demonstrates his commitment to this particular natural subject. For structuring these fables and emblems Leonardo possibly used studies of geometry featured on the same folios. His thematic inspiration was more likely based on natural observations of insects' behavior. Leonardo could, in fact, watch the interaction of spiders and flies in his own vineyard, which Ludovico Sforza gave to him in 1498 as a present.¹²⁸ That being said, we still lack the specific source of Leonardo's fables on the spider and the vineyard and any significant visual outcome that would justify such interest in this topic.

Artistic fabular and emblematic expressions contemporary to Leonardo that relate to spiders are not easy to locate. However, we do find spiders and vineyards, both in the form of fables and emblems in late fifteenth century emblem books. By employing the fables and the emblems of the spider and the vineyard as a case study, I survey late Cinquecento emblem catalogues with the aim to document the survival of emblems derived from Leonardo's fables. This would allow me to situate Leonardo's development of fables into emblems in a broader context.

¹²⁸ Cf. paragraph 2.1.1. *Sage and Grapes*, in this chapter.

An interesting emblem of the spider appears in Guillaume La Perrière's *Le theatre des bons engins*, published in 1540.¹²⁹ Its emblematic illustration displays the right corner of an empty room with a spider catching several flies on its web. The corresponding text reads:

L'Araigne ha belle & propre invention,
 Quand sur sa toile elle attrape les mousches:
 Mais elle est foible, & n'a protection,
 Pour resister aux grosses, & farouches.
 Au temps qui court, gros ne craignent les touches,
 La loy n'ha lieu que sur pauvre indigence,
 Les riches ont de mal faire licence,
 Pauvreté n'ha jamais le vent à voile.
 Qu'ainsi ne soit, on void par evidence,
 Que grosse mousche abbat legiere toile.¹³⁰

¹²⁹ Guillaume La Perrière's *Le theatre des bons engins* (1540) is the first documented French book of emblems. Very popular at the time of its publication around Europe, it even predates Corrozet's *Hecatomgraphie* published by Janot. The first manuscript version was presented to Marguerite de Navarre in 1535, and it was completed the following year. Cf. Guillaume de la Perrière's *Theatre des bons engins*, Paris, Denis Janot, n.d. (1544). *Emblematica Online*, accessed January 24, 2017. <http://www.emblems.arts.gla.ac.uk/french/books.php?id=FLPa>.

¹³⁰ Guillaume La Perrière, *Le theatre des bons engins*, 1544, XLIX. Illustrations of analogous passages are found in the 1551 and 1557 editions of Claude Paradin's *Devises heroïques*, under the chapter *Lex elex* ('the law, or outlaw'). I transcribe the corresponding passage from the 1557 edition: "Anacharse Filosofo acomparoit les Loix, aus Toiles des Araignes, lesquelles prennent et retiennent les petites Mouches, Papillons, et autres bestions, et laissent passer les gros et fors, ce que de mesmes font aussi les Loix, qui par mauvaise interpretation ne lient les riches et puissans, mais sont rigoreuses et contreingnent seulement les povres imbeciles, foibles et petis." In Pierre Coustau's *Pegma* (1555), the theme is readapted as follows, with a new illustration: "Ad araneam, vulgatum ex Diogene. / In corruptos judices. / Dum volat, elatae telas disrumpit Arachnes / Oestron, et impavide mollia pensa terit. / Sed capitur tenuis macilento corpore musca, / Nec fugit arguta retia ducta manu. / Sic pauper positae fortes vix effugit urnae, / Sed dives rupto vimine tutus abit." ('While it is flying along, the Horsefly breaks through the web of the high-raised Spider, and, undaunted, worries away the soft treads. But a little fly with its weak body is caught, and does not escape the web woven with a cunning hand. In just the same way a poor man can hardly escape the hazards of the placed urn, but a rich man can break through the web and walk away safe'). The 1560 French edition of the text *Le pegme* is published, accompanied by the same illustration: "Sur l'Araignée selon Anarchasis. Contre les juges favorables. / Petite mouche au corps subtil et mince / Volant fut prise aux rais d'une araignée: / Mais le

La Perrière presents the spider as a clever inventor, whose web surely captures the little flies, but has no power against greater insects. Even if the moral content of the text differs from his depictions of spiders, both the French illustration and emblem stage a scene close to Leonardo's fable 17, of the spider and the hornet—one of the great insects against which the spider has no power.¹³¹ Other interesting illustrations can be found in Claude Paradin's *Devises heroïques* (Lyon, 1551),¹³² Pierre Coustau's *Pegma* (Lyon, 1555),¹³³ and Hadrianus Junius' *Emblemata* (Antwerp, 1565) (Figure 2-23).¹³⁴

bourdon d'autres mouches le prince, / Passa tout outre et rompit la trainée. / Un seigneur grand en avoir et lignée / Franc les files de noz judges traverse: / Mais cil qui a la fortune indignée, / Dedans leurs neuz et detours souvent verse." An emblem on the theme of the spider is also featured in Hadrianus Junius' *Emblemata* (1565), to illustrate the text: "Funesto Arachnen flos idem succo replet, / Apique mella sufficit liquentia. / Concordiae litisque idem dictum est parens: / Scriptura pravis sica, fit scultum bonis." ("The same flower fills the Spider with her poisonous juice, / As provides liquid honey for the Bee. / The same phrase gives rise to unity and discord: / Scripture that is a dagger in the hands of the wicked becomes a shield to defend the good.") In the French edition *Les emblesmes* (1567), text and illustration are unvaried: "La mesme fleur nourist l'Avette & l'araignee, / L'une y cuille le miel et l'autre le poison: / L'accord & le discord sont de mesme lignee. / L'escripture est sterile aus homes sans raison, / Et aus bons elle sert d'une targe gaignee." *Emblematica Online*, accessed December 30, 2017. <http://emblematica.grainger.illinois.edu/search/emblems?query.keywords=spider>.

¹³¹ Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti Letterari*, n. 19.

¹³² Claude Paradin's *Devises heroïques* (1551) is the earliest collection of devices as marks of ownership. It became soon extremely influential across Europe thanks to its publication in various forms and languages. Cf. Claude Paradin's *Devises heroïques*, Lyons, Jean de Tournes and Guillaume Gazeau. *Emblematica Online*, accessed January 24, 2018. <http://www.emblems.arts.gla.ac.uk/french/books.php?id=FPAA>.

¹³³ Coustau's *Pegma* (1555) translates and integrates Alciato's emblem book. In this edition, each emblem is accompanied by an elaborated commentary in the form of 'narratio philosophica.' Because Coustau was a jurist, like Alciato, his emblems overall relate to legal issues. Cf. Pierre Coustau's *Pegma*, Lyons, Macé Bonhomme, 1555. *Emblematica Online*, accessed January 24, 2018. <http://www.emblems.arts.gla.ac.uk/french/books.php?id=fcpb>.

¹³⁴ Hadrianus Junius's *Emblemata* (1565) is modelled on Sambucus' learned *Emblemata* (1564) in form and style, and was particularly influential at the time of its publication. Junius's addition to

In Scipione Bargagli's *Imprese*,¹³⁵ published in Siena in 1578, there are no pictures of emblems with spiders. However, Bargagli mentions a brief description of an *impresa* on this subject, drawn from a verdict by the philosopher Anacarsis, quoted in Herodotus' *Historiae*—which is also the source of the previously mentioned French emblems:

Una di queste si è la famosa sentenza d'Anacarse Folosofo, da cui fu pronunziato: Le leggi essere a guisa di tele di ragni, dove i leggieri, e piccoli animali rimangono avviluppati; e i gravi, e i grossi le sfondano. E io ho veduto Impresa tessuta d'una di sì fatte tele, con isquarcio d'una banda, e un moschino intascato dall'altra, il cui motto diceva: DISCIDUNT MAGNA.¹³⁶

The motto signifies that important things divide, that is, create conflict. This does not specifically relate to Leonardo's spiders; nevertheless, particularly interesting to us is how the emblem is categorized. The text continues:

[...] sono alcune maniere d'impresе, le quali secondo lo 'ntender mio, arrivar non possono all'ultimo perfetto segno [...] Di queste sono l'impresе in biasimo altrui scoperte: qual fu il soffione, che sentiste il giorno passato, col Motto, TANTUM CREPITUS [...]. Di cotali impresе arbitro esser quella della Edera, che abbracciando il muro, lo rompe, e l'atterra: e quella della tela di ragno, che i moschini ritenendo, è da mosconi sfondata.¹³⁷

Sambucus' *Emblemata* consisted of a detailed commentary, which examines metre, picture and argument of the epigram. Cf. Hadrianus Junius's *Emblemata*, Antwerp, Christophe Plantin, 1565. *Emblematica* Online, accessed January 24, 2018. <http://www.emblems.arts.gla.ac.uk/french/books.php?id=FJUb>.

¹³⁵ Scipione Bargagli, *Dell'impresе* was published in Venice by Francesco de' Franceschi in 1594. The first book of the treatise, entitled *La prima parte delle impresе*, was printed in 1578 by Luca Bonetti in Siena. In 1594 it was reprinted with the author's praise of the academies and, in 1579, with the praise of Alessandro Piccolomini, a member of the Accademia degli Intronati of Siena, in occasion of his death. As Girolamo Ruscelli in *Le impresе illustri*, Bargagli devoted pages to describe *impresе* that were commissioned by noble women. Cf. Mansueto, *The Italian Emblem: A Collection of Essays*, 68.

¹³⁶ Scipione Bargagli, *Dell'impresе* (Venice: Francesco de' Franceschi, 1594), 300.

¹³⁷ *Ibid.*, 310.

Bargagli tells us that one of his friends (“l’Amico”) composed the emblems of the spider and of the ivy and the wall for a young man who was spoiled by his lover. This dynamic recalls Sienese love rhetoric, and shows that Leonardo’s use of the same characters for his fables and emblems—which seemed original at the end of the fifteenth century—in the late sixteenth century, was recorded as commonplace. As already noticed, Leonardo’s spider web appears in his fables 12, 17, 45, 52, and signals a break in the fable tradition. The same is true for the wall ruined by tree branches in his fable 5—not belonging to the ivy but to the nut tree, in Leonardo’s case.¹³⁸

Textual references to Leonardo’s fables and emblematic representations are also found previously in Bargagli’s treatise. While discussing possible sources of inspiration for *imprese*, Bargagli uses the emblem of the falcon to praise emblems that find new comparisons in nature to express longstanding concepts:¹³⁹

Questo si è d’un falcone, il quale sciolto da’ getti, onde lo teneva legato il suo Signore, et andato libero a cielo aperto, egli come che potesse in sua libertà rimanere, e godersi della dolcezza dell’aria e della largura della campagna; non per tanto si vede allegramente tornare a quello in pugno, et all’antica servitù sottentrare. In ispiegamento di sì fatta natura d’augello, dal nostro Familiare avvertita; fu per lui preso lo spirito Petrarchevole di questo suono, o qualità.

¹³⁸ For the spider web, see: Leonardo da Vinci, Cod. Atl., fol. 187r, *Scritti Letterari*, Marinoni, ed., n. 14; Leonardo da Vinci, Cod. Atl., fol. 188v, *Scritti Letterari*, Marinoni, ed., n. 19; Leonardo da Vinci, Cod. Atl., fol. 820r, *Scritti Letterari*, n. 33; Leonardo da Vinci, Cod. Ar., fol. 42v, *Scritti Letterari*, Marinoni, ed., n. 38. For the wall, see: Leonardo da Vinci, Cod. Atl., fol. 188v, *Scritti Letterari*, Marinoni, ed., n. 5.

¹³⁹ Particularly, Bargagli discussed emblems drawn from comparisons and words used in other writings, and those that employ other writers’ conceits (meaning “concetto,” “spirito”). Exemplary is the emblem of the crab, which combines a conceit by Petrarch and a comparison found in the spider’s nature. According to Bargagli, emblems that use others’ comparisons are less praiseworthy than those that conceive new comparisons. Cf. Bargagli, *Dell’imprese*, 295-97.

Piu dico, che 'l tornare a quel c'huom fugge,
 E'l cuor, che di paura tanta sciolsi,
 Fu della fede mia non leggier pegno.

E ciò venne da lui operato, una voce sola del Poeta scambiando in questa guise. TORNO A QUEL, CH'ALTRI FUGGE.¹⁴⁰

The subject of the falcon, which assumes multiple roles both in Leonardo's manuscripts and late Cinquecento emblem books, constitutes the second case study analyzed.

Initially the falcon—such as the spider and the monkey—features in Leonardo's natural observations and comparative anatomy experiments. On fol. 16r of his *Codex on the Flight of Birds*, Leonardo draws an image of a bird under the title: "Persuasione alla 'mpresa, che leva l'obbiezioni" ('persuasion to the *impresa*, which removes objections'). This title amusingly refers to *impresa*—in the double meaning of 'emblem' and 'undertaking'—which needs supporting evidence in order to avoid dissent. Subsequently, Leonardo discusses the differences between muscles in humans and birds to develop a project of mechanical wings. The falcon is used as an example of the great force of which certain birds are provided to carry their prey:

[...] tanta fortezza è apparecchiata per potere oltre all'ordinario suo sostenimento delle alie, gli bisogna a sua posta raddoppiare o triplicare il moto per fuggire dal suo predatore o seguitare la preda sua. Onde in tale effetto li bisogna raddoppiare o triplicare la forza sua e oltre a di questo portare tanto peso ne sua piedi per l'aria, quanto è il peso di se medesimo. Come si vede al falcon portare l'anitra e all'aquila la lepre, per la qual cosa assai bene si dimostra dove tal soperchia forza si distribuisce.¹⁴¹

The falcon has to deal with a duck also in Leonardo's fable 16:

¹⁴⁰ Bargagli, *Dell'impresie*, 297.

¹⁴¹ Leonardo da Vinci, Cod. Volo, fol. 16r.

Il falcone non potendo sopportare con pazienza il nascondere che fa l'anitra fuggendosele dinnanzi e entrando sotto acqua, volle come quella sotto acqua seguitare, e, bagnatosi le penne, rimase in essa acqua, e l'anitra levatasi in aria, schernia il falcone che annegava (*fab. 16.*)¹⁴²

Curiously, the scientific text celebrates the falcon as an exemplary bird for balancing its weight in the skies while carrying a duck, whereas the fable reverses the situation to show the falcon's failure. If the bird has naturally the strength to easily get and carry its prey into the air, it clearly cannot chase the duck underwater. As it happens in the fables of the spider and the lily, those who do not respect the laws of Nature are doomed. On the other side of the same folio, fable 19 shows another falcon, which is also prevented from catching its prey—a magpie that hides in the willow tree's branches.¹⁴³

Bargagli uses the emblem of the falcon with a specific purpose: he is analyzing possible inspirational motifs for developing *imprese*.¹⁴⁴ According to him, the falcon is exemplary of emblems modeled on nature, art, and also literature—specifically, the Aesopic fables:

È perciò da ritornare alquanto a que' due luoghi generali da noi aperti, e sicuri raffermati da trarre imprese della Natura, e dell'Arte, et aggiungendo, dire: Che si può anche andar di quelle

¹⁴² Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti letterari*, Marinoni, ed., n. 18. "A falcon could no longer patiently endure the way the duck escaped from it by diving underwater and hiding there. So it resolved to pursue the duck underwater. But its feathers became soaked, and it was trapped in the water. The duck took the air, and mocked the falcon as it drowned." Transl. Marsh, *Renaissance Fables*, 287.

¹⁴³ Cf. Leonardo da Vinci, Cod. Atl., fol. 188r; *Scritti letterari*, Marinoni, ed., n. 7. The name of falcon appears many times in Leonardo's manuscripts to signify mechanical structures and pieces of artillery. In one case, Leonardo cites a *falconiere* ('falconier' or 'fowler'). A *falconiere* is probably also the man featured in the emblem of the falcon mentioned by Bargagli. The man appears, in fact, to take care of the falcon to be used for hunting. Cf. fols. 1012v, 1034r, 62r (here Leonardo beautifully sketches an old and a new model of falcon), 575bv, 774v from the Codex Atlanticus; fol. 127 from Codex Arundel; and fols. 18v, 25r, 26r from Ms. L.

¹⁴⁴ In Bargagli's *Dell'imprese*, the falcon (in the form of "falco," that is, hawk) appears also on page 244.

in paesi più particolari cercando, e più pronti de' sopradetti degli scrittori: e tali peravventura gli Apologi riescono over le favole lasciateci da Esopo, o da altri morali filosofi nelle lor carte; per ammaestramento della vita humana, e quali ancora si rendono i proverbi, e le sentenze: avvenga che non tutte queste cose generalmente possano allogare alcuno, dove si faccia acquisto delle buone imprese.¹⁴⁵

There is, in fact, an Aesopic fable about the falcon that arguably provided the model for both Leonardo's fable and Bargagli's emblem. It is *De capone et ancipitre*, recorded in Caffarelli's

Fabulae, from Leonardo's library:

<Racc>onta Exopo in questa fabula chi uno tempo lo falcone vedendo uno certo capone fugere pero chi vedea venire lo padrone suo li disse: per che o capone fuge tu te deve allegrare molto quando tu vidi il tuo padrone venire: cussi como io me sforzo in la venuta sua sempre allegrarme. Et lo capone respose la diversa pena e morte de li mi fratelli me spaventa: ad ti non bisogna timere de cosa alchuna certificandote che non e cosa che piu se debbia timere cha la casa de uno crudele signore: la quale ogni rasone et pietade e morta: in la quale etiam dio sonno arrobatoe famigli crudele et servitor scelerati: che se adaptano per via de crudelitate servire ad li loro iniusti signori et quilli servitor che sonno in la loro casa che non voleno usare violencia ne fraude: sonno da ipso fraudolentemente occisi: et cossi li boni spesso perisseno senza havere commesso alchuno peccato: Et in questo modo le mei fratelli che non hanno peccato sonno stati morti: et tu falcone po che tu si cussi crudele et malvaso: al tuo signore te ama et lo vigore de la sua nequitia te fa suo amico: et quilli anchora sonno amici allo signore che bagna la casa propria de sangue et quilli che sosteneno la pena et morte lo ventre de lo avaro signore loro sepellisse: Io adunque temendo lo aspecto del signore credo amuzarme cun piu securitade et retraermi dala morte: Che moralimente se intende che li signore non amano in sua casa li boni ma amano li cattivi et scelerati: Et li homini iniqui piaceno molto allo signore.¹⁴⁶

¹⁴⁵ Bargagli, *Dell'imprese*, 297-8.

¹⁴⁶ Inc. 51A19, Fazio Caffarelli, *Aesopus, Fabulae* (Mastro Octaviano Salamonius de Manfridonia: Cosenza, 1478), fol. 71r-v.

The fable appears also in Accio Zuccio's *Aesopus moralisatus* and in Del Tuppo's *La vita dell'Esopo* as fable 63, in which the falcon (*falcone*) is transformed in a sparrow hawk—and called, respectively, *sparavier* and *sprevero*.¹⁴⁷

¹⁴⁷ The analysis of the presence of *falcone* in collections of Aesopic fables is rather problematic because predatory birds such as falcons, sparrow hawks, and kites are often used interchangeably. Transformations from one bird into the other in versions of the same fable recorded in different collections are often due to translation choices. I limited my sample to cases in which the term *falcone* is at least mentioned in one of the collections belonging to Leonardo's library. As exemplary of the overlaying of the falcon and the sparrow hawk's roles in this context, I include here the very same Aesopic fable of the capon and the falcon in the version by Accio Zucco. This version is particularly close to Caffarelli's one with regard to length and theme. Zucco's fable reads: "*De capone et accipitre. Fabula lxiii*, Querere diffugium domino veniente caponex audax accipiter dum videt inquit ei. Quid fugis: exulta dominum dum cernis adesse: euius in adventu plaudere nitor ego. Me capo respondit fratrum diversa meorum terret pena: tibi non timor ullus adest. Nil magis horrendum quam flebilis aula tyrannis qua pietas omnis cum ratione perit. Raptores famulicuis truces scelerum quis ministry iniustus dominis impietate placent. Qui sine vi sine fraude manent hi fraude necantur nullo damnantur crimine sepe boni sic fratres periere mei: te reddit amicam impietates domino: nequicieque vigor hi proprias lavere stolas in sanguine passos martyrium sepelit venier avarus eos. Illius ergo timens aspectum credo latere tutius: ut morti me rapuisse queam non amas infantes sed fontes aula tyranny: cum placet inusto raptor iniquus hero. / Sonetto materiale. / Torna el signore lieto da caccia: / Fuge el capon quando el vede venire: / E il sparavier li comincio adire: / Qual tema te commove o mente pacia. / Che del mio sire la chiarita faccia / Veder un puoco non poi sofferire: / Vedi quanto e giocondo el suo redire / Che ogni melencolia da me discaccia / El capon dice: la pena diversa / De mei fratelli me commove a fuga / Che te fa lieto quanto piu e dispersa. / Così lieto e ciascun chio mi distruga / Ne la mason tyranna aspra e perversa / Che me e li mei occidendo me manoduga. / Pon ama iusticasa de tyranni / Che a malvasio signor piacen linganni. / Sonetto morale. / Il capon fugie fora de le porte / Quando el signor vien da la foresta / Diceli el suo sparaviero che ti desta / A fuger quando el signor vien a corte. / Dice el capon io temo laspra sorte / Che me occida et a te po faccia festa. / Corte tyranna mai non fu modesta / Chel falso honora e al iusto da la morte / Collui che serve a dio teme el nemico / El peccator col demonio sta saldo / Perché con esso participa el spico. / E cossi el sparaviero francho e baldi / Sta quando sente el signor che suo amico / El capon fuge e scondesse nel paldo. / Tristo collui che sempre el tyran segue: / Che par poi chome giacio al sol se slegue." Inc. IA.31102, Accio Zucco's *Aesopus moralizatus* (Boninus de Boninis: Brescia, 1487), fols. 88v-90r. Cf. also *De capone et accipitre. Fabula LXIII* in Inc. Res M Yc129, Del Tuppo, *La vita dell'Esopo e le favole del medesimo* (Walter d'Angleterre: Naples, 1485), pp. 318-21. The falcon appears in only one other occasion recorded in Leonardo's collections of Aesopic fables. It is the fable *De columbis et ancipitre*, again, from Caffarelli's *Fabulae*: "<Racc>onta Exopo in questa fabula chi accade che uno tempo le columbe piglaro per loro signore lo falcone: adzoche da loro levasse da nante lo loro inimico zoe lo nibio: lo quale falcone facto loro re più loro nocea che lo inimico loro

Leonardo probably reelaborated the theme of the falcon chasing a big bird, kept the falcon and transformed the capon into a duck in his fable 16. The lengthy Aesopic fable developed in dialogic mode is also reenacted in Leonardo's fable 19. In addition, the two fables use similar terms to characterize the falcon. Leonardo's "falcone crudele e rapace" ('cruel and rapacious falcon') reinterprets Caffarelli's falcon that is "crudele" ('cruel'), "malvaso" ('wicked') and "scelerato" ('evil'). Bargagli's procedure with respect to Aesop is slightly different. He uses the main concept of the Aesopic fable to depict the inner nature of the falcon, which is inclined

nibbio: et per questo le columbe comenzareno lamentarse multo de loro re falcone: dicendo che ad loro feria multo megliore sostenere la Guerra de lo nibio ca morire senza battagliaire: zoe per le mano delo falcone loro signore: Che moralimente se po intendere chi quella cosa che fa l'homo la deve fare cum bono consiglio: et considerare lo fine che ne po ensire: et per quisto io voglo o lectore sostenere piu presto le cose multo legere per non sostenere da poi le cose multo grave." Inc. 51A19, Caffarelli, *Aesopus*, fol. 43r. Among the other versions of the fable in Leonardo's library, I record here only Accio Zucco's fable 24, which I believe to be the most significant source in this context: "De accipitre et colombis. Accipitrem milui pulsorum bella columbe accipiunt regem: rex magis hoste nocet. Incipiunt de rege queri: quod sanius esset milui bella pati: quam sine marte mori. Si quid agis prudenter agas et respice finem. Ferre minora volo ne graviora feram. Dice il maestro che una grande guerra era fra il nibio e le columbe bianche et eran per lo assedio tanto stanche che quasi per paura se sotterra: e per lo scampo al svaraver se afferra perche se capitani stavan manche tenendose per lui libere e franche libero arbitrio a lui dona e disserra. Mangiava il sparavier gli lor picioni unde le matre querendo lor nati disperse fuora per le lor magioni tra lor dicendo melius bella pati erat: che morir senza questioni che piu siamo dal re danneggiati. Se tu fai cosa alcuna guarda il fine acio che in le piu grave non ruine." Inc. IA.31102, Zucco, *Aesopus*, fol. 32r. In Del Tупpo, the same fable is entitled *De regio accipitre et columbis fabula XXIII*, pp. 164-66. The fable also appears as *La seconde fable des colombes du Milan et de lespervier*, at book II from the French edition: Frère Julien, Augustinus de Lyon, *Fables d'Ésope* (Matthias Huss et Johann Schabeler: Lyon, 1484), pp. 54-55. As broadly exemplified, the term *falcone* is only found in two fables from Caffarelli's edition; all the other editions use the more versatile terms *vulture* and *sparviero*. In the Lyon edition we find two interesting fables about the fowler—*fauconnier* in French, close to the Italian *falconiere*, which designates the person in charge of falcons to be used for haunting (*La vii fable est du fauconnier et des oiseaux*, p. 81; *La quarte fable est de la venerie et de la faulconerie*, pp. 166-67).

to its “antica servitù” (‘ancient servitude’), as recorded in bestiaries and other historical records on the animal.¹⁴⁸

Leonardo uses the falcon as representative of a different kind of nature in modeling the entries for his bestiary. First, the falcon represents the virtue of magnanimity:

Magnanimità.

Il falcone non preda mai se none uccelli grossi, e prima si lascerebbe morire che si cibassi de’ piccoli o che mangiasse carne fetida.¹⁴⁹

This passage clearly rewrites the *Fior di Virtù*.¹⁵⁰ In both of the texts, the falcon likes only big birds and never eats spoiled meat:

E puossi appropriare e assomigliare la virtute della Magnanimita al Falcone: el quale prima si lascierebbe morire di fame che lui mangiasse di una carne Marcia e mai non piglia se non uccelli grossi.¹⁵¹

¹⁴⁸ For instance, in the *Massime*, a collection of Anglo-Saxon poems composed in between the nineteenth and the tenth centuries, the falcon is housed on the man’s glove, the wolf in the wood, and the boar in the forest: “Hauf seal on glofe / wilde gewunian, wulf sceal on bearowe, / earm anhaga, efor scea on holte, / tođmægenes trum.” Cf. Dora Faraci, *Simbolismo animale e letteratura* (Manziana, Rome: Vecchiarelli, 2003), 43. For a reference closer to Leonardo, see Burchiello, from his personal library. Cf. *I sonetti del Burchiello*, Zaccarello, ed., CXXXVII, v. 8, 137, and CXI, v. 14, 140.

¹⁴⁹ Leonardo da Vinci, Ms. H, fol. 10r. “Magnanimity. / The falcon will only prey on large birds, and it would allow itself to die sooner than feeding on the small ones or eating putrid flesh.” Modified transl. Venerella, *Manuscript H*, 13.

¹⁵⁰ Marani identified the source of this entry in the cap. XXVIII. Cf. Marani, “Le fonti del ‘Bestiario’ di Leonardo,” *I manoscritti dell’Institut de France, Il Manoscritto H*, Marinoni, ed., 145; Richter 1883, n. 1230a, II, 319 (ed. 1970, II, 264); Solmi 1908, 163; De Toni 1922, 63; Fumagalli 1943, 227; Marinoni 1952, 97; MacCurdy 1956 (1977, II, 426); Marinoni 1974, 100; Pedretti 1977, II, 262.

¹⁵¹ *Fior di Virtù historiato*, Tommaso Gozzadini, ed. Florence: Turati, 1949, XXIX.

Similarly, in chapter XIX from *L'Acerba*, which concerns the excellent nature of the falcon, this perfection is exemplified precisely by the falcon's attitude for standing out and not eating spoiled meat:

Herodio, qual'è detto falchone,
 Più fier col petto che non fa col becho,
 Ascolta quanta è il lui perfectione:
 S'en doi volati non prende sua chaza,
 Vergogna forte sì che sta a stecho,
 E quel giorno animal più non menaza.
 L'altro, chi è domestecho, pur vagha
 E per vergogna per l'aer va sparso:
 Di ritornare a lui tardo s'invaga.
 Non becha mai di putrida carne,
 Sia quanto vòle di fame converso.¹⁵²

The falcon's desire to distinguish itself from the other birds is so great that if it does not capture its prey in two attempts, it hides ashamed in solitude. Leonardo recovers these features of its behavior in the other entry of his bestiary on the falcon. However, he uses them to convey an opposite meaning: they do not signify greatness and perfection anymore, but egotism and pride:

Superbia.

Il fa<I>cone per la sua alterigia e superbia, vole signoreggiare e sopraffare tutti li altri uccelli che son di rapina, e se n' desidera essere solo; e spesse volte s'è veduto il facone assaltare l'aquila, regina delli uccelli.¹⁵³

¹⁵² Cecco d'Ascoli, *L'Acerba*, XIX, 193.

¹⁵³ Leonardo da Vinci, Ms. H, fol. 11v; *Scritti letterari*, Marinoni, ed., n. 30. "Arrogance. / The falcon, because of his haughtiness and arrogance, would dominate and subject all the other birds that are predatory, as it would be the sole one. And many times, a falcon has been seen to attack the eagle, the queen of the birds." Transl. Venerella, *Manuscript H*, 15. Marani identified as the primary source of this entry, once more, *Fior di Virtù*, cap. XXXV. Cf. Marani, "Le fonti del 'Bestiario' di Leonardo," Leonardo da Vinci, *I manoscritti dell'Institut de France. Il manoscritto H*, Marinoni, ed., 145; Richter 1883, n.

The falcon and the eagle—in Leonardo’s scientific text placed side by side as structurally made to carry their prey—are here defined as predatory and, therefore, pitched one against the other.

By comparing the two chapters on the falcon from Leonardo’s bestiary, the bird appears as a symbol of the virtue of magnanimity (represented by its diet based on great birds instead of spoiled meat) and of the vice of pride (represented by its desire to defeat more skilled animals). This is particularly clear in the comparison between the falcon and the eagle—one of the exemplary predatory animals together with the raven and the wolf—defined by Leonardo as the queen of the birds in accordance with the bestiary tradition.¹⁵⁴ The falcon apparently shows a dual character—both magnanimous and excessively prideful. As a result, it conveys contradictory allegorical meanings. It is strange that this happens in the same bestiary.

Nevertheless, we should not forget that Leonardo surely aimed to reorder his writings on animals. It is likely he was initially not sure about which version to use for his entry on the falcon. The rewriting of the chapter on magnanimity in another part of the same manuscript—marked with a circle that probably indicated the part to eventually print—reveals that Leonardo opted for this version among the two:

Magnanimità.

Il falcone non preda mai se none uccelli grossi,
e prima si lascerebbe morire
che si cibassi de’ piccoli

O Magnanimità.

Il falcone non piglia se non uccelli grossi
e prima more

1232a, II, 320 (ed. 1970, II, 265); Solmi 1908, 165-66; De Toni 1922, 65; Fumagalli 1943, 220-21; Marinoni 1952, 98-99; MacCurdy 1956 (1977, II, 427); Marinoni 1974, 101; Pedretti 1977, II, 262.

¹⁵⁴ Cf. Faraci, *Simbolismo animale e letteratura*, 43.

o che mangiasse carne fetida.¹⁵⁵

che mangiare carne di non bon odore.¹⁵⁶

The second entry on magnanimity is briefer; the sentence about the falcon's avoidance of eating small birds is omitted, and the style of the writing moves away from the exactitude of the treatise toward a more fluid and agile piece of literary prose. Considering the use of rhymes and assonances (*prima; more; mangiare; odore*), and the immediacy of the image depicted, it appears more as a *motto* than a bestiary chapter. Even if this '*motto*' is not accompanied by a pertinent illustration, other labeled drawings on the same folio and adjacent pages testify to Leonardo's processing of his entries into emblematic representations. The main source of these pictures is *Fior di Virtù*, as in the case of most of Leonardo's bestiary entries. As Brizio argued: "they somehow clarify the kind of interest that moves Leonardo to transcribe passages from *Fior di Virtù*."¹⁵⁷ The comparative analysis between *Fior di Virtù*'s passages and Leonardo's 'transcriptions' shows that Leonardo widely reelaborated his sources with the aid of other

¹⁵⁵ Leonardo da Vinci, Ms. H, fol. 10r. "Magnanimity. / The falcon will not prey except on large birds, and it would allow itself to die sooner than feeding on the small ones or eating putrid flesh." Transl. Venerella, *Manuscript H*, 13.

¹⁵⁶ Leonardo da Vinci, Ms. H, fol. 101r. "Magnanimity. / The falcon will not seize any but large birds, and it would sooner die than consume flesh of an ill odor." Transl. Venerella, *Manuscript H*, 111. As Marani already argued, this is a modified version of the previously discussed entry on magnanimity. The suggested source is, therefore, the same: *Fior di Virtù*, cap. XXVII. Cf. Marani, "Le fonti del 'Bestiario' di Leonardo," Leonardo da Vinci, *I manoscritti dell'Institut de France. Il manoscritto H*, Marinoni, ed., 152; Richter 1883, n. 1264, II, 334 (ed. 1970, II, 276); Solmi 1908, 167; De Toni 1922, 86; Fumagalli 1943, 221; Brizio 1952, 128; MacCurdy 1956 (1977, II, 441); Pedretti 1977, II, 265.

¹⁵⁷ Here is the original passage by Brizio: "Anche i detti raccolti in questo foglio, e nei fogli seguenti 118 e 119, che in molta parte si discostano dal bestiario vero e proprio, sono tratti dal *Fior di Virtù*, e perciò si pongono qui a seguito dei precedenti: essi valgono in qualche modo a chiarire la specie d'interesse che guidava Leonardo a trascrivere i passi dal *Fior di Virtù*." Brizio *Scritti scelti*, 128. My translation.

traditions and the employment of his creativity. In any case, these reelaborations are ostensibly at the foundation of Leonardo's emblems.

The first picture is right beneath the falcon's entry on fol. 101r (Figure 2-24). It is the head of a spear grasped by a fist, labeled "Costanzia. Non chi comincia, ma quel che persevera."¹⁵⁸ According to Pedretti, this emblem is modeled on chapter 31 from *Fior di Virtù*: "Non è da laudare chi comincia, ma chi finisce."¹⁵⁹ Below that, a sledgehammer suspended by a pivot, with the sledge downward, is shown in two positions; at one position it strikes a mechanical device. The label, saying "moto assai durabile,"¹⁶⁰ translates the theme of 'constancy' into a mechanical device in constant motion. At this point of the manuscript, the falcon disappears, apparently without giving us the possibility to connect these last two images with the previous falcon entry.

The solution comes from the emblematic image on the *recto* of fol. 63 on Forster II. It is the rebus "fal con tempo" ('do it in good time'), composed of a falcon that carries in its beak a piece of balance wheel meaning *tempo*.¹⁶¹ Apparently, Leonardo uses the falcon's faculty of carrying great preys discussed in his scientific observation, fable and bestiary entry to symbolize the virtue of "magnanimity," and he combines it with the balance wheel to signify "constancy."

¹⁵⁸ Leonardo da Vinci, Ms. H, fol. 101r. "Constancy. Not the one who begins, but the one who perseveres." Transl. Venerella, *Manuscript H*, 111.

¹⁵⁹ "The praise goes not to him who begins, but to him who finishes." Transl. Pedretti, *Commentary*, 690.

¹⁶⁰ Leonardo da Vinci, Ms. H, fol. 101r. "Quite long-lasting motion." Transl. Venerella, *Manuscript H*, 111.

¹⁶¹ This emblematic representation of the falcon is previously discussed in Chapter 1, 1.1.2.

The result is an intriguing *impresa*, which Carlo Vecce recently confirmed to be of Leonardo's invention (Figure 2-25). As Bernhard Schirg argued, Leonardo created this emblem as a gift to the Ferrara Cardinal Ippolito d'Este as a means to win his support around 1506-07.¹⁶² Accordingly, the renowned early modern commentator Paolo Giovio records in his *Dialogo dell'impresе militari e amorose*¹⁶³ a similar device as representative of Cardinal Ippolito:

Hippolito da Este Cardinal di Ferrara zio del moderno, che ha il medesimo nome, hebbe per impresa un Falcone che sosteneva con gli artigli i contrapesi d'uno horologio; come si vede dipinto sulla porta del parco delle Terme di Diocletiano; e non vi mise motto, perche voleva intendere con lo spezar la parola del Falcone, che faceva cose à tempo; cioè fal con tempo, e viene ad havere quella medesima menda che hà il Falcon col diamante della Casa de' Medici.¹⁶⁴

¹⁶² Cf. Vecce, *La biblioteca perduta*, 35; Schirg, "Decoding Da Vinci's impresa," 135-36, 144, 149.

¹⁶³ Giovio's *Dialogo dell'impresе militari e amorose* was written in 1551 and was published posthumous in 1555. It is the first emblem treatise to clearly explain the aims and uses of *impresе* as devices wore by illustrious lords and knights on clothes, harnesses and standards to signify their thoughts. The first version of the text (*Dialogo dell'impresе militari et amorose di Monsignor Giovio vescovo di Nocera*) was edited by Antonio Barre (Rome, 1555). In 1556, Lodovico Domenichi and Girolamo Ruscelli printed two revised and expanded editions. Domenichi's edition was entitled *Dialogo dell'impresе militari et amorose di Monsignor Giovio vescovo di Nocera. Con un ragionamento di Messer Lodovico Domenichi nel medesimo soggetto*, published by Gabriel Giolito Ferrari in Venice in 1556. In the same year, Ruscelli wrote *Ragionamento di Mons. Paolo Giovio sopra i motti et disegni d'arme, et d'amore, che communemente chiamano Imprese. Con un Discorso di Girolamo Ruscelli intorno all'invenzioni dell'impresе, dell'insegne, de' motti, e delle linee*, that was published by G. Ziletti (Venice, 1556). These editions did not contain pictures. The first illustrated edition, entitled *Dialogo dell'impresе militari et amorose di Monsignor Giovio vescovo di Nocera. Con un ragionamento di Messer Lodovico Domenichi nel medesimo soggetto* was published by Guglielmo Roviglio (Lyon, 1559). In my dissertation, I quote from the 1559 edition by Domenichi, otherwise noted. For a discussion of Giovio's treatise in relation to Leonardo's pictographs see Vecce, 'La parola e l'icona,' 176.

¹⁶⁴ Giovio, *Dell'impresе*, 117. "Ippolito d'Este, Cardinal of Ferrara, ... had as an impresa a falcon which held in its claws the counterweights of a clock, as you can see painted on the door of the palco of the Baths of Diocletian. He did not put a motto with it, because he wanted to imply, by splitting the word of the falcon, that he was doing things in good time. This falcon happened to have the same defect as the diamond of the Medici family." Transl. Schirg, "Decoding Da Vinci's impresa," 141. The Medici emblem of the falcon with the diamond is also mentioned at the very beginning of the treatise, on page

Giovio clearly outlines the defect of this *impresa*, considered as clumsy because does not align with his definition of emblem as composed of both a *motto* and a *figura*.¹⁶⁵ In addition, Giovio's account shows a falcon holding a clock mechanism in its claws to decorate the Roman Baths of Diocletian—this description slightly differs from Leonardo's *impresa*, in which the falcon's beak holds the clock. Curiously, an exact description of Leonardo's rebus is discussed earlier in Mario Equicola's *De opportunitate*, published in February 1507:

Hippolytus Estensis cardinalis memorandam sententiam ingegniosis patere voluit et ut omnium oculi voluptate afficerentur... Ex accipitrum genere falco est, qui Samnitum li<n>gua olim capis dicebatur, qui nomen Capuae dedit augurato. Italico sermone nunc falcon dicimus. Ore gestat rostroque tenet partem illam horologii tinnuli quasi libramentum, que ponderibus librata et continuo motu circumducta rotulas dentatas ita concitatat paru intervallo, ut horae mallei ictu ad tintinabulum nuntientur. Partem illam tempus dicimus, cum per ipsam horas cognoscamus partes temporis. Reddit ergo nobis Italice falcon tempo non dictione modo aut syllaba, sed ne littera quidem abundanti.¹⁶⁶

3, and on page 42, with related illustration: "Prese il Magnifico Pietro figliuolo di Cosmo per impresa un Falcone, che haveva ne gli artigli un Diamante, il quale è stato continuato da Papa Leone, e da Papa Clemente pure col breve del SEMPER rivolto, accomodato al titolo della Religione." (Ibid, 42.) Curiously, in the second edition of Giovio, *Dell'impresie* (1562) the emblem of the Medici falcon is missing.

¹⁶⁵ Giovio, *Dell'impresie*, 12, 64. Schrig, "Decoding Da Vinci's impresa," 142.

¹⁶⁶ Equicola, *De opportunitate*, Bir-v. "Cardinal Ippolito d'Este wanted his memorable maxim to be obvious to ingenious men, but also that it would strike the eyes of everybody with pleasure at the same time... It [the *impresa*] is a falcon, belonging to the family of birds of prey. Once it was called capis in the language of the Samnites. It has also given its name to the city of Capua as the result of a prophecy. In Italian, we nowadays call this bird a *falcon*. Within its mouth, the falcon carries and holds in its beak that part of a bell clock like a balancing weight (*libramentum*), which, balanced by weights and put into a continuous circular motion, transmits a steady interval onto the gear wheels so that each hour can be announced by a hammer striking the bell. We call this part *tempus*, because due to this very part we recognise the hours as single parts of time. Consequently, the *impresa* renders to us the Italian maxim 'do it in good time' (*falcon tempo* [i.e., '*fa<lo> con tempo*']), resorting to neither the means of language nor a single syllable. In fact, it does not even use one unnecessary letter." Transl. Schrig, "Decoding Da Vinci's impresa," 140.

Here, the mechanical piece is clearly identifiable as a foliot—a balancing weight—that the falcon holds in its beak.¹⁶⁷ As Equicola recorded, Cardinal Ippolito used the emblem of the falcon in his private letters as a symbol of ‘opportunity,’ to remind his interlocutors to seize the right moment and make conscious use of time.¹⁶⁸ What is striking here is that Equicola employed this very emblem to examine how the combination of words and images can express abstract concepts:

Cuiusmodi sit illud quod predicas insigne enuclea! An Aegyptiorum secutus vestigia, qui, antem Isis illos litterarum <m>u<n>ere donaret, figuris utebantur?¹⁶⁹

Ippolito’s rebus is here considered as a particularly witty *impresa*—whose figura argutely implies its motto. The remarkable fortune of this emblem is confirmed by its translation into a low relief for the temple of Saint Cristoforo at the Certosa of Ferrara among other devices connected to Casa d’Este. Even though there is no proof that the relief was by Leonardo, this sculpture that was recently called to the attention of scholars by Micaela Torboli, represents a rare trace of the public destination of Leonardo’s *imprese*—namely rebuses.¹⁷⁰

¹⁶⁷ The foliot was used to set the rate of a clock. Schrig, “Decoding Da Vinci’s *impresa*,” 139. On the clock mechanism, see also Marinoni, *I rebus di Leonardo da Vinci*, 145; Pedretti, *Studi vinciani: documenti, analisi e inediti leonardeschi*, 102.

¹⁶⁸ Schrig, “Decoding Da Vinci’s *impresa*,” 137–39, 142.

¹⁶⁹ Equicola, *De opportunitate*, Aiiiv. “Elucidate the character of this *impresa* you mentioned! Did Ippolito follow the tradition of the Egyptians, who used symbols before Isis presented them with letters?” Transl. Schrig, “Decoding Da Vinci’s *impresa*,” 139.

¹⁷⁰ As Sarah McHam observed, Leonardo’s first connection with emblems is found on the rear side of the Ginevra de’ Benci portrait, which is linked to Bernardo Bembo, and can also be considered to have a semi-public destination. Cf. Micaela Torboli, “All’interno del tempio un piccolo tesoro con firma di Leonardo,” *La nuova Ferrara*, September 13, 2017, accessed January 23, 2017. <http://lanuovaferrara.gelocal.it/tempo-libero/2017/09/13/news/all-interno-del-tempio-un-piccolo-tesoro-con-firma-di-leonardo-1.15850981>.

As Bargagli's treatise illustrates, the use of the falcon as material for emblems is codified as primarily modeled on Aesopic fables—which also influenced Leonardo's reelaboration of the topic. In *Giovio*, Leonardo's emblem is criticized because it lacks a *motto* and, therefore, is considered unsophisticated.¹⁷¹ Leonardo's emblem, as reported in Equicola's *De opportunitate*, clearly departs from this tradition and offers the first recorded example of a well-acclaimed *impresa* that lacks of a *motto*.

Finally, late Cinquecento emblem treatises explain that not all literary writings are good places for developing *imprese*. For instance, Bargagli indicates that it is necessary to choose only fables that focus on Nature (featuring animals and natural properties of things) to teach about good living:

Delle favole primamente, possonci al bisogno tener proveduti, che e vere nature discuoprono d'animali bruti, e proprie qualità d'altre cose di Natura; e non già quelle favole, che finte sono studiosamente dall'acuto intelletto del suo Autore.¹⁷²

He concludes with some examples of Aesopic fables that are good basis for emblems, and mentions the fable of the crow—which is also a favorite subject for Leonardo's fables and emblems.¹⁷³ Bargagli's account on “natural fables” as basis of good emblems ends mentioning the case of the thrush, which is based on Pliny.¹⁷⁴ It is curious that he uses the same definition of “natural fables” both for Aesopic and Plinian stories, which are together considered as major

¹⁷¹ *Giovio, Dell'imprese*, 12, 64. Schrig, “Decoding Da Vinci's *impresa*,” 142.

¹⁷² Bargagli, *Dell'imprese*, 298.

¹⁷³ *Ibid.*

¹⁷⁴ *Ibid.*, 300.

sources for *imprese* as long as they deal with natural pictures. In this way, Bargagli perfectly documents Leonardo's structuring of emblems based on fables which are drawn from Aesop and Pliny. Therefore, Bargagli not only contextualizes some of Leonardo's emblems, but also his use of Aesop and Pliny as major sources for his textual and visual narratives.

This survey concludes focusing on another very productive subject for emblems based on a natural picture. It is the butterfly, which frequently recurs in Leonardo's scientific texts, fables and allegorical drawings, and has variously triggered the interest of the critics. We could not locate a definitive emblem in Leonardo's manuscripts derived from his fable of the butterfly. However, Leonardo's use of the subject in various fields of investigation through pictorial and written representations testifies to its importance in his project of conveying knowledge through words and images.

A first version of the emblem is recorded in Giovio's *Dell'imprese*, where Hippolita Fioramonda, marchioness of Scaldasole in Pavia, is said to wear a sky blue satin dress embroidered with golden butterflies. This dress was aimed to advise her lovers not to get too close to her fire, in the way butterflies usually do, because they would get burnt:

Hebbe ancora questo medesimo difetto la bellissima impresa, che portò la s. Hippolitta Fioramonda Marchesana di Scaldasole in Pavia, la quale all'età nostra avanzò di gran lunga ogn'altra di bellezza, leggiadria, et creanza amorosa; che spesso portava una gran veste di raso di color celeste, seminata di farfalle di ricamo d'oro, ma senza motto, volendo dire, et avvertire gl'amanti, che non si appressassero molto al suo fuoco, accio che tal hora non intervenisse loro, quel che sempre interviene alla farfalla, la quale per appressarsi all'ardente fiamma, da se stessa si abbrucia.¹⁷⁵

¹⁷⁵ Giovio, *Dell'imprese*, 12-13.

As in the case of the falcon's emblem, Giovio judges this *impresa* as imperfect because it uses images but avoids words: again, it does not have a *motto*. This is particularly interesting for our discourse because it attests the fortune of another exceptional *impresa* in form of rebus that relates to Leonardo.¹⁷⁶ At the same time, Giovio's description ironically lacks images because it does not provide any illustration of the emblem. Its image will only appear seven years later, in the 1562 edition of the text. (Figure 2-27)¹⁷⁷ The illustration from this edition shows a moth that flies toward a candle to represent excessive passion, or *amor soverchio*—as the scroll says “Così vivo piacer conduce a morte” (‘such alive [intense] pleasure leads to death’).¹⁷⁸

In his 1566 emblem treatise,¹⁷⁹ Girolamo Ruscelli attributed this emblem to Giovan Battista Palatino and slightly changed the motto: “E so ben ch'io vo dietro a quel che m'arde” (‘I know well

¹⁷⁶ In his discussion of the relationship between Leonardo and Giovio, Vecce already argued that the point of departure for the *impresa* of the Marchesa Scaldasole recorded in Giovio's *Dell'impresie* are Leonardo's fables on the butterfly, and an allegory of the same subject preserved at the Royal Library of Turin (BT 15578v). The Turin allegory is examined later in the paragraph. Cf. Vecce, “La parola e l'icona.” 177.

¹⁷⁷ The first publication of Giovio's *Dell'impresie* is dated to 1555; in my dissertation, I quote from the 1559 edition by Domenichi. In this particular case, I refer to the 1562 edition. On the various editions of Giovio's *Dialogo dell'impresie militari e amorose*, see note 149 in this chapter.

¹⁷⁸ Giovio, *Dell'impresie* (1562), 25. My translation. The caption simply outlines the concept in verses: “Il moderato amor si loda et prezza, / Ma il troppo apporta danno et dishonore, / Et spesso manca nel soverchio ardore, / qual semplice farfalla al lume avvezza.” Ibid. In this edition, the butterfly also appears—together with the crab—in the emblem of Cesare Augusto accompanied by the motto *FESTINA MENTE*, to celebrate thoughts that are rapidly put into action. The emblem of the butterfly and the crab is followed by this brief explanation: “Augusto pria col Granchio e la Farfalla / Fece in oro scolpire il bel concetto, / Quasi dicesse in così vario obietto, / Chi ben pensa, et fa tosto, mai non falla.” Ibid., 11.

¹⁷⁹ I refer to Girolamo Ruscelli, *Le imprese illustri*, published in Venice by Francesco Rampazetto in 1566. The first emblem book curated by Ruscelli is an illustrated edition of 1555 Giovio's treatise, dated to 1556. Ruscelli is the first editor to point out some of Giovio's incongruencies and theoretical

that I chase what burns me down’).¹⁸⁰ What interests us of Ruscelli’s version is that he broadly contextualized the emblem—highlighting a few sources that Leonardo had at his disposal. Ruscelli argues that modern writers wrongly considered the term *farfalla* (‘butterfly’) as the Greek *Pyralis* or Latin *Pyrausta* recorded in Pliny. In fact, Pliny speaks about an insect that is born and lives its short life in the fire; but fire does not generate butterflies, it only attracts them.¹⁸¹ According to Ruscelli, the notion of the *Pyrausta* that is burnt to death because of its attraction towards the lamp is drawn from the Greek writers Zenodoto, Eliano and Aeschylus, and then remodeled on Petrarch.¹⁸² I would add to Pliny and Petrarch as Leonardo’s sources for the theme of the butterfly

weaknesses. Cf. Arbizzoni, “Imprese as Emblems,” 12. On Giovio’s different editions, see note 149 in this paragraph.

¹⁸⁰ Girolamo Ruscelli, *Le imprese illustri* (Venice: Francesco Rampazetto, 1566), 494. My translation.

¹⁸¹ Ruscelli writes Pliny’s exact words from his *Naturalis Historia*, chapter 36, book 11: “In Cypriis arariis fornacibus ex medio igne, maioris muscae magnitudinis volat pennatum quadrupes, Appellatur Pyralis, à quibusdam Pyrausta. Quandiu est in igne, vivit, cùm evasit longiore Paulo volatu, moritur.” Ruscelli, *Le imprese illustri*, 494.

¹⁸² Particularly interesting is the quote from Aeschylus: “Io temo grandemente di non far la pazza morte della Pirausta.” Ibid., 495. Ruscelli outlines several possible meanings of the emblem, describing those who bring death to themselves; those who have a very short life; those who can live only at their place. Petrarch is, according to Ruscelli, the author who best celebrates the nature of the butterfly: “Son’ animali al mondo di sì altera / Vista, che contra il Sol pur si difende, / Altri però che il gran lume gli offende, / Non escon fuor, se non verso sera. / E altri, col desio folle, che spera / gioir forse nel fuoco, perchè splende, / Provan l’altra virtù, quella, che incende, / Lasso, il mio loco è in quest’ultima schiera. / Ch’io non son forte ad aspettar la luce / Di questa Donna, e non so fare schermi / Di luoghi tenebrosi, ò d’hore tarde / Però cogli occhi lacrimosi, e infermi / Mio destino à vederla mi conduce, / E so ben, ch’io vo dietro a quel, che m’arde.” Ibid., 496. Bargagli’s discussion of the emblem draws directly from Ruscelli and condemns it because it assimilates human and animal natures. According to Bargagli, animals do not look for things that harm them, or that are far from their nature, as the butterfly in Ruscelli’s emblem does. On the contrary, humans often know what is best for them, but they choose the worst. Therefore, the emblem of the butterfly does not correctly outline the insect’s nature: “Per questa cagione non possiamo a niun partito approvar tra quelle del Ruscello, da altri stimata tanto affettuosa; e cotanto vaga quella della simplicetta Farfalla; che se ne corre al lume, a cui ella è avvezza a volar

and the candle also Trecento writers, such as Chiaro Davanzati and Giacomo da Lentini, who preferred the term *parpaglione*—or moth—to that of *farfalla*, as did Leonardo.¹⁸³

The burnt *parpaglione* features in two fables and an emblematic representation by Leonardo, who does not omit to study the insect from a scientific point of view as well. The term

dintorno: col motto del Petrarca: E SO BEN, CH'IO VO' DIETRO A QUEI CHE M'ARDE." Bargagli, *Dell'imprese*, 125. As a result, Bargagli creates a new motto for the emblem using the last sentences of Petrarch's poetry, which insists on the positive desire of the butterfly to rejoice in the fire's splendor: "GIOIRE SPERA." In this way, the nature of the butterfly—which is like all the other animals, to seeks its preservation—is respected: "[...] ella si va raggirando presso al lume, con isperanza di trarne gioia, e contento; non pure, ch'esso ardito fosse dire, che la Farfalla a quello andava dietro, ch'ella pur sapeva, che la scotterebbe, et s'abbrucierebbe ancora. Perciocche non era punto nascosto al Petrarca dicendo di lei cosa tale, che diceva bugie della prima natural proprietà di tutti gli animali; la qual è, per primo provvedimento dato loro dalla sapientissima Natura, di conservare sopra tutte le cose la vita, e 'l proprio esser loro; schifando tutto quello, che lor possa recare alcun nocimento." Ibid., 126-27.

¹⁸³ I follow Marsh's interpretation of the term moth, which reads the Italian *parpaglione* as principally referring to *farfalla notturna* (moth) instead of *farfalla* (butterfly). Cf. Marsh, *Renaissance Fables*, 297. The use of *parpaglione* is a commonplace in the history of Italian literature. For instance, as observed in Mario Praz, it appears in Giacomo da Lentini. Cf. *Studies in Seventeenth Century* (Rome: Edizioni di Storia e Letteratura, 1975) 93-94: "Sì come 'l parpaglion, ch'à tal natura, / Non si rancura – de ferire al foco, / M'avete fatto gentil creatura; / [...] lo cor, che non à ciò che brama, / Se mor' ardendo nela dolce fiamma." ('Like the butterfly, whose nature is such that it does not mind beating against the flame, I have been reduced by you, o gentle one; [...] my heart which has not what it desires, dies burming in the sweet flame'.) Transl. Praz, *Studies in Seventeenth-Century Imagery* (Rome: Edizioni di Storia e Letteratura, 1975) 93. Cf. Garver, "Sources of the Beasts Similes in the Italian Lyric of the Thirteenth Century," in *Romanische Forschungen* 21, 276 ff.; *Il vano e vagabondo parpaglione*, accessed January 17, 2017. <http://mirellasama.blogspot.it/2012/07/il-vano-e-vagabondo-parpaglione.html>. We find a *parpaglione* in the Bestiario moralizzato from the 13th-14th century: "Lo parpalione corre la rivera, / là ove vede lo claro splendore, / e tanto va girando la lumera, / che lo consuma lo foco e l'ardore. // Pare' ke tenga simile mainera / la creatura a l'omo peccatore: / colla beleça de l'ornata cera / lo lega a terribile encendore." Chiaro Davanzati also uses the image of the *parpaglione* in his bestiary (*Del Parpalione*, 54, 1-2): "Il parpaglion che fere a la lumera / per lo splendor, ché sì bella gli pare, / s'aventa ad essa per la grande spera, / tanto che si conduce a divampare: // così facc'io, mirando vostra cera, / Madonna, e 'l vostro dolce ragionare, / ché diletando struggo come cera / e non posso la voglia rinfrenare." The poetry clearly ends with the death of the *parpaglione*: "Così son divenuto parpaglione, / Che more al foco per sua claritate." ('The butterfly that hits against the lamp because of its brightness which seems so lovely to it... So do I, gazing at your face, my lady [...] Thus am I become a butterfly, which dies in the flame because of its brilliance.') Transl. Praz, *Studies in Seventeenth Century*, 93.

parpaglione appears, in fact, for the first time on folio 64v from the Paris Manuscript G, in a section devoted to the study of the flight of birds. While examining different ways in which birds fly, Leonardo suddenly lingers on the flight of the moth as exemplary of the fourth species of flight. After drawing a little sketch of the moth, on which the four wings and the tail are labeled *c b – f – a d*, he writes:

Volano li pa<r>paglioni delle 4 alie, equali e sepeate, sempre colla coda alta, facendosi di quella timone a qualunque vario moto. Cioè s'elli vuole discendere, elli abbassa la coda; e s'elli vuol montare, esso eleva la coda in alto; e s'elli vol voltarsi a destra o sinistra, elli piega la coda a destra o sinistra, e così fa in qualunque varie obbliquità di moti interposti in f<r>a li detti quattro moti principali. E questo è il massimo parpaglione delle predette spezie, di colore nero e giallo.

Usa le 4 sue alie nelli corti e vertiginosi corsi, quando vol predare le piccole formiche alate, movendo alcuna volta la destra dinanti e la sinistra dirieto, e <a>lcuna volta la sinistra dinanti e la destra dirieto, perché il timone fatto della coda non vale alla maggiore o minor velocità del suo moto.¹⁸⁴

Another sketch of the moth with the wings in three positions (*e n – b c – m f – g d o*) closes the text. On folio 65r, Leonardo draws a last illustration of the insect and goes back once more to the description of the moth's flight:

<Il> parpaglione e molti simili animali insetti volan tutti con 4 alie, avendo minori quelli dirieto che quelle dinanzi, e quelle dinanti fanno in parte coperchio a quelle dirieto, e tutte queste tal generazioni di posson levare con moto diritto, perchè quando tale alie s'inalzano, elle rimangono traforate tenendo assai più alte l'alie dinanti che quelle dirieto; e così tiene insin quasi al fine di quello impeto che la spigne in alto, e poi nello abbassarle le maggiore alie si giungano alle minori, e così discendendo riacquistano nuovo impeto. Ancora c'è altre spezie di volatile insetti, li quali volano con quattro alie equali, ma queste non si coprano l'una l'altra nel discendere né <e>tiam nello inalzarsi, e questi tali non si possono levare con moto recto.¹⁸⁵

¹⁸⁴ Leonardo da Vinci, Ms. G, fol. 64v.

¹⁸⁵ Leonardo da Vinci, Ms. G, fol. 65r.

In Leonardo's fable 40, his scientific observations on the moth are brilliantly turned into a literary description.¹⁸⁶ This very long and dialogic text shows the moth tracing various circles into the air and repeatedly flying toward the lamp up until it gets burnt:

Andando il dipinto parpaglione vagabundo, e scorrendo per la oscurata aria, li venne visto un lume, al quale subito si dirizzò, e, con vari circoli quello attorniando, forte si maravigliò di tanta splendida bellezza, e non istando contento solamente al vederlo, si mise innanzi per fare di quello come delli odoriferi fiori fare solia. E, dirizzato suo volo, con ardito animo passò per esso lume, el quale gli consumò li stremi delle alie e gambe e altri ornamenti. E caduto a' piè di quello, con ammirazione considerava esso caso donde intervenuto fussi, non li potendo entrare nell'animo che da sì bella cosa male o danno alcuno intervenire potessi. E restaurato alquanto le mancate forze, riprese un altro volo, e, passato attraverso del corpo d'esso lume, cadde subito bruciato nell'olio che esso lume notrià, e restogli solamente tanta vita, che poté considerare la cagion del suo danno, dicendo a quello: "O maladetta luce, io mi credevo avere in te trovato la mia felicità; io piango indarno il mio matto desiderio, e con mio danno ho conosciuto la tua consumatrice e dannosa natura

Detta per quelli i quali, veduti dinanzi a sé questi lascivi e mondani piaceri, a similitudine del parpaglione, a' quelli corrano, senza considerare la natura di quelli; i quali, da essi omini, dopo lunga usanza, con loro vergogna e danno conosciuti sono.¹⁸⁷

¹⁸⁶ Moths and butterflies are rarely used in the fable tradition, and do not feature in Leonardo's collections of fables contained in his library. The butterfly appears in Phaedrus's fable 130 and Alberti's apologue 60. In Phaedrus, the butterfly is vane and irrepressible. It cries in front of the wasp its cruel destiny and complains to be "levitas putris et volito cinis" Phaedrus, *Favole, fab.* 130, v. 6, 290.

¹⁸⁷ Leonardo da Vinci, Cod. Atl., fol. 692r; *Scritti letterari*, Marinoni, ed., n. 31. "A colorful moth was idly wandering and flying about in the darkened air when it saw a lamp, toward which it at once directed its course. Passing around it in various circles, the moth marveled at its radiant beauty; and, not content with merely viewing it, the moth headed toward the lamp, as it was want to do with fragrant flowers. Directing its flight toward it, the moth boldly passed through the flame, which burned the tips of its wings, legs, and antennae. Falling at the foot of the lamp, the moth reflected in amazement at how this accident had occurred, for it could not conceive how any evil or harm could come from something so beautiful. When it had regained some of its lost strength, the moth took to flight again, passed through the heart of the flame, and at once fell burned into the oil which fed the lamp. With only enough life left in it to reflect on its injury, the moth said: 'O cursed light, I thought I had found happiness in you, but now I weep in vain at my mad desire. To my harm, I have understood your destructive and harmful nature.' The lamp replied: 'That is how I treat those who do not know how to use me properly.' Sinking to the bottom of the lamp, the moth ended its life. / This applies to people who, seeing sensual and wordly pleasures before them, fly to them like the moth without considering their true nature. But after

The moth is a colorful and idly wanderer that suddenly sees a light and is impressed by its splendid beauty. Therefore, it directs its course towards it—note the repetition of words focusing on ‘direction’ (*dirizzò; dirizzato*)¹⁸⁸ that we also found in the scientific texts (*moto dritto; moto recto*)¹⁸⁹ to both express the insect’s faculty to flight straight into different directions and its persistence. For three times, the insect ‘bodily’ (*con ardito animo*) flies in the light’s aim even after its wings, legs and ornaments get consumed. In the final dialogue, the tragic death of the moth is motivated by its persistence in using the light inappropriately, against its own nature.

The moth also appears in Leonardo’s fable 25, which differs from the previous one for its condensed format and evocative final monologue that avoids the traditional moral:

Non si contentando il vano e vagabondo parpaglione di potere comodamente volare per l’aria, vinto dalla dilettevole fiamma della candela, diliberò volare in quella; e ’l suo giocondo movimento fu cagione di subita tristizia; imperò che ’n detto lume si consumarono le sottile ali, e ’l parpaglione misero, caduto tutto brusato a piè del candellieri, dopo molto pianto e pentimento, si rasciugò le lacrime dai bagnati occhi, e levato il viso in alto disse: “O falsa luce, quanti come me debbi tu avere, ne’ passati tempi, avere miserabilmente ingannati. O si pure volevo vedere la luce, non dovev’io conoscere il sole dal falso lume dello spurco sevo?”¹⁹⁰

long experience, these people understand such pleasures, to their shame and harm.” Transl. Marsh, *Renaissance Fables*, 308.

¹⁸⁸ Leonardo da Vinci, Cod. Atl., fol. 692r; *Scritti letterari*, Marinoni, ed., n. 31.

¹⁸⁹ Leonardo da Vinci, Ms. G, fol. 65r.

¹⁹⁰ Leonardo da Vinci, Cod. Atl., fol. 187r; *Scritti letterari*, n. 4. “No longer content with flying easily through the air, a vain and vagrant moth was overpowered by the enchanting flame of the candle and decided to fly into it. But this pleasant impulse proved the cause of sudden sadness. For its wings were consumed by the flame, and the wretched moth fell to the foot of the candlestick, burned all over. After much crying and contrition, it wiped the tears from its wet eyes, and lifting its face upwards said: ‘O false light, how many others in the past you must have miserably deceived like me! And if I still wished

The fable's incipit *non si contentando* immediately proclaims the moth's fault in its dissatisfaction in face of usual commodities. The adjective *vagabondo* ('vagrant'), already used in the other version (*vagabundo*) is here accompanied by *vano* ('vain') that substitutes the attribute *dipinto* ('colorful') and better defines the insect's naïveté. Leonardo greatly simplifies the setting and focuses on the insect's characterization: in realizing its cruel fate, the moth's playful attitude is dispelled by sudden sadness (*subita tristizia*) and tears stream down its face. The fable concludes with the moth's tragic monologue in front of a now silent and 'false' (instead of 'cursed') light.¹⁹¹

This fable is usually considered to be the first draft of fable 40.¹⁹² The longer version seems, in fact, more elaborate in style and structure—it uses dialogue and is followed by an explanatory moral, as in the Aesopic tradition. However, fable 40 unfolds into details of scientific exactitude and literary repetitions that slow down the rhythm of the prose. In addition, in the short version the final description of the miserable moth in tears displays a particularly

to see the light, shouldn't I have distinguished the sun from the false glow of your dirty tallow?" Transl. Marsh, *Renaissance Fables*, 297. Here Leonardo uses the term *miserabilmente*, which recalls *mirabilmente* and, therefore, reinforces the idea of mirable deceitment perpetuated by Nature. As noted by Marsh (*Renaissance Fables*, 297), Leonardo also uses the periphrasis *pianto and pentimento* in fable 20, where a flame approaches a candle and is converted into smoke: "[...] con pianto e pentimento in fastidioso fumo si convertì, lascian<do> tutte le sorelle in isplendevole e lunga vita e bellezza." Leonardo da Vinci, Cod. Atl., fol. 188r; *Scritti letterari*, n. 8. "[...] with crying and contrition, it changed into smelly smoke, and left all its sister flames behind in long life and splendid beauty." Transl. Marsh, *Renaissance Fables*, 291. As Marsh (*Renaissance Fables*, 297) records, flames and candles also appear in fables 2 and 24.

¹⁹¹ Cf. Marsh, *Renaissance Fables*, 297, 308.

¹⁹² Cf. Vecce, ed., *Scritti*, 70; Carlo Vecce, "Leonardo e il 'paragone' della natura," in *Leonardo on Nature*, Frosini and Nova, eds., 193.

poignant dramatization. In fable 25, the insect looks up into the sky like a Euripidian hero invoking the silent Gods—the true sun hidden in the false candlelight. In this way, the moth signifies the desire of dissolution that is part of every being. The moth’s tragedy becomes the tragedy of human ignorance: light is made for contemplation, and not for possession.¹⁹³

The dramatization of the scene, the humanization of the moth and consequent enrichment of meaning in fable 25 lead me to speculate that it might have been written after fable 40. This hypothesis is supported by the appearance of the folios on which the two fables are featured. Fable 40 is in fact recorded, together with another fable, on folio 692r—a sheet mainly devoted to unrelated mathematical divisions. Fable 25 appears, instead, on folio 187r, which represents an exceptional case of orderly organization of fables, elegantly outlined in columns, one after the other.

Intriguingly, in his *Disputa “pro” e “contra” la legge di natura*, Leonardo juxtaposes the moth’s desire of reaching the light to the human aspiration of knowing the truth, as he does in fable 25:

PRO. Or vedi, la speranza e ’l desiderio di rimpatriarsi e ritornare nel primo chaos fa a similitudine della farfalla a’ lume, dell’uomo, che con continui desideri senpre con festa aspetta la nuova primavera, senpre la nuova state, senpre e’ nuovi mesi e nuovi anni, parendogli che le desiderate cose, venendo, sieno troppo tarde, e non s’avede che desidera la sua disfazione. Ma questo desiderio è in quella quintessenza spirito degli elementi, che, trovandosi rinchiusa per anima dello umano corpo, desidera sempre ritornare al suo

¹⁹³ Cf. Vecce, *Leonardo*, 103; Marinoni, *L’educazione letteraria*, in *Gli appunti grammaticali*, 165.

mandatario, e vo' che sapi che questo medesimo desiderio è 'n quella quinta esenza compagnia della natura, e l'uomo è modello del mondo.¹⁹⁴

This human-animal desire consists, according to Leonardo, in going back to the 'original chaos,' that is, the origins of each creature, in conjunction with Nature. It is a positive strive that assimilates creatures to Nature, which can lead to dramatic outcomes if it goes beyond natural limits.¹⁹⁵

Leonardo seems to develop the image of the moth and the candle at the core of his fables 40 and 25 in order to gradually reduce its level of description and complicate the possible layers of interpretation. The result is, once more, an emblematic representation. On a folio dated 1485 and preserved at the Royal Library of Turin (BT 15578v), Leonardo draws an apparently blind figurine approaching a fire, and then getting burnt by it, perhaps surrounded by several little moths (Figure 2-28).¹⁹⁶ Beside it, he writes:

¹⁹⁴ Leonardo da Vinci, Cod. Ar., fol. 156v. *Disputa "pro" e "contra" la legge di natura. Scritti letterari*, Marinoni, ed., 169-70; Ponte, *Leonardo prosatore*, 34.

¹⁹⁵ Marinoni brilliantly outlined the tension emerging from depictions of animals and plants contained in Leonardo's fables: "La grettezza... mentale di animali e piante, che si esaltano di un loro momentaneo trionfo, o avidamente corrono alla preda, spinti ciecamente dagli impulsi naturali, per essere infine travolti o beffati da uno sviluppo imprevisto degli eventi, è continuamente contrapposta all'infinità di 'ragioni' naturali, che determinano le vicende dei mortali." Marinoni, *Una virtù spirituale*, in *I rebus di Leonardo da Vinci*, 81. See also Vecce, "Leonardo e il 'paragone' della natura," *Leonardo da Vinci on Nature*, Frosini and Nova, eds., 195.

¹⁹⁶ Marinoni already observed the correlation between the fables and the drawings of butterflies in the Turin folio. Cf. Marinoni, *L'educazione letteraria*, 67; Solmi, *Le fonti di Leonardo*, 321. See also Carlo Pedretti, *Disegni di Leonardo da Vinci e della sua scuola alla Biblioteca Reale di Torino* (Florence: Giunti Barbèra, 1975).

la ciecha ignoranza chosì ci chonduce
 e chol effetto de lascivi sollazzi
 per non chonoscere la vera luce
 per no chonoscere qual sia la vera luce
 ignoranza
 el vano splendor ci toglie l'essere
 vedi che per lo splendor nel fuocho andiamo
 cieca ignoranza in tal modo chonduce
 che
 o miseri mortali aprite li occhi.¹⁹⁷

This allegorical notation seems to rework the themes of truth and falsehood that we find in fables 40 and 25. In the Turin allegory, the terms *lascivi sollazzi* ('lascivious joys') reenact *lascivi piaceri* ('lascivious pleasures') from fable 40, such as *vano splendor* ('vain splendor') and *non chonoscere la vera luce; no chonoscere qual sia la vera luce* ('not knowing the true light') reiterated and variate *vano parpaglione* ('vain moth'), *vedere la luce* ('seeing the light'), *conoscere il sole* ('knowing the sun') and *falsa luce; falso lume* ('false light') from fable 25. Arguably, the allegorical fragment of words and images represents Leonardo's climax in representing the dynamics of knowing the—ultimately unfathomable—laws of Nature.¹⁹⁸

¹⁹⁷ Leonardo da Vinci, BT 15578v. "Blind ignorance misleads us thus and delights with the results of lascivious joys. / Because it does not know the true light. / Because it does not know what the true light is. / Vain splendor takes from us the power of being... / Behold how owing to the glare of the fire we walk where blind ignorance leads us. / O wretched mortal, open your eyes!" Transl. Richter, *The Notebooks*, 246. Cf. Marco Versiero, "A similitudine de la farfalla a' lume. L'umanesimo scientifico di Leonardo da Vinci." *Le lettere. Umanesimo, Storia, Critica, Attualità*, 2016, accessed December 30, 2017. <https://halshs.archives-ouvertes.fr/halshs-01380909>. 101. Between the two fragments I added the word *ignoranza*, which Leonardo writes and then crosses off. "Per non chonoscere la vera luce" and "per no chonoscere qual sia la vera luce" are probably two alternatives of the same proposition.

¹⁹⁸ Cf. Ibid., 100-02.

2.3.2. *Mirrors*

In discussing suitable material on which to model his *imprese*, Bargagli privileged the use of natural properties. However, he did also mention fables focusing on artificial objects:

Si può adunque da noi per cagion di trovar material d'Imprese andare alle favole posate, come ho detto, nelle proprietà naturali: di cui non è piccola la copia e la moltitudine. Ancora puossi altri accostare alle fondate negli usi veri delle cose artificiali, se di tai favole vi vengono, come credo, trovando alcune.¹⁹⁹

Before him, Giovio already expanded the emblems' realm from natural subjects to mechanical instruments:

Sappiate adunque Lodovico mio, che l'inventione o vero impresa, s'ella debba avere del buono, bisogna [...] sopra tutto habbia bella vista, la qual si fa riuscire molto allegra, entrandovi stelle, Soli, Lune, fuoco, acqua, arbori verdeggianti, instrumenti meccanici, animali bizzarri, et uccelli fantastichi.²⁰⁰

These documents testify that the relationship between mechanics and emblems during the Cinquecento is inherent in the definition of emblems themselves.

In Leonardo, the link between fables, emblems and mechanical instruments functions both on a thematic and on a structural level. In his fables and emblems of the spider, the falcon and the moth, natural subjects already coexist with artificial ones. For instance, Leonardo's fables 12, 17 and 45 feature the spider smashed during the grape harvest, which was definitely performed through mechanical instruments. In the fable of the spider and the keyhole, the insect protagonist is obviously killed by the key, even though the silent killer is not explicitly

¹⁹⁹ Bargagli, *Dell'imprese*, 298.

²⁰⁰ Giovio, *Dell'imprese*, 9.

mentioned in the text.²⁰¹ The key is then unequivocally drawn in the corresponding emblem. Furthermore, Leonardo's emblem of the falcon juxtaposes the bird to what is exactly a mechanical device—a piece of balance wheel. Then, in one version of the fable of the moth, Leonardo pictures the insect being killed by the lamp, which is indeed a source of artificial light. This is probably why the moth can twice—and with reason—address it as 'false light.'

There is another instrument that is both the protagonist of Leonardo's fables and emblems that not only directly relates to the theme of the 'false light,' but also connects most of the writings and drawings discussed so far. This is the mirror, featured in the form of an emblem, together with the lily on the back of the Windsor folio RL 12700, where our interrelations of fables and emblems began. Below a series of geometrical diagrams, Leonardo traces allegorical representations of truth and falsehood of the kind of the Turin allegory (Figure 2-29). In Bambach's description of the folio, the cameos' main motif is that of a synuous female figure, Truth (*verita*), holding the mask of Falsehood (*bugia*) against the sun.²⁰² The motif is repeated eleven times; each time undergoes a slight variation.²⁰³

On the bottom right, we see a refined image, in which at least two different women are holding a mirror against the sun. They both move toward the sun on the top right, looking at each other. Their robes fall symmetrically to occupy the two sides of the cameo in a scroll shape

²⁰¹ Cf. Leonardo da Vinci, *fab.* 52. Leonardo da Vinci, Cod. Atl., fol. 820r; Marinoni, ed. *Scritti Letterari*, n. 33; Marsh, *Renaissance Fables*, 313.

²⁰² Cf. Bambach, *Leonardo da Vinci: Master Draftsman*, cat. 574.

²⁰³ The motif of the curvy lines recalls representations of flames and air that we found in Leonardo's rebuses and in his textual description *Dì della voce per l'aria*, discussed in Chapter 1, paragraph 1.1.3.

(Figure 2-29.a). A reelaboration of the same sketch is repropounded in two elementary drafts right below it, in which the group of figures melts, so that it is no longer possible to differentiate between the two women and the mirror. The first draft suggests a mesh of three bodies and the second apparently shows even four figures, entangled in the manner of the *Saint'Anne and the Virgin* cartoon from the National Gallery—similarly dated (1501–1505)—and other studies on this subject (2-29.b-c). This first group of figures is accompanied by a passage on fire as destroyer of falsehood and discoverer of truth:

Il foco è da esser messo per consumatore d'ogni sofistico e scopritore e dimostratore di verità perchè lui ~~foco~~ è luce e scacciatore delle tenebre occultatrici d'ogni essenza.²⁰⁴

Moving toward the left of the folio, a light sketch of flames formally similar to that of the Turin allegory surmounts a new cameo in which two faces are covered with a mask, looking toward the left (2-29.d). In the following cameo, Leonardo goes back to the previous composition, directed toward the right. The women are clearly two, aligned in a way that they seem to spring from one single body, holding their mirror in the shape of a mask that melts when facing the sun (2-29.e). These images are framed by a notation that reelaborates the concepts expressed in the previous text, and associates falsehood to the image of a mask:

| | |
|-----------|----------|
| verità | sole |
| bugia | maschera |
| innocenza | — |

²⁰⁴ Leonardo da Vinci, RL 12,700r; Bambach, *Leonardo da Vinci: Master Draftsman*, cat. 574. “Fire is to be put for the destroyer of every sophistry, as the discoverer and demonstrator of truth; because ~~fire~~ it is light, the banisher of darkness, which is the concealer of all essential things.” Transl. Richter, *The Notebooks*, 245.

malignità

Il foco distrugge la bugia cioè il sofistico e rende la verità scacciando le tenebre.²⁰⁵

Verità

il foco distrugge ogni sofistico cioè l'iganno e sol mantiene la verità cioè l'oro

soffi

<stico>

la verità alfin non si cela non val simulatione.

simulation è frustrata davanti a tanto giudice—. ²⁰⁶

Leonardo studies the position of the women three other times in sketches scattered around the cameos (2-29.f-g). Then, in the left bottom corner, two illustrations show a mask burning into flames and, finally, the image of a beautiful face of a girl that gradually turns into the mask of an ugly old woman, melted by the sun (2-29.h-l). Three possible labels for the emblem's scroll and an explanatory caption accompany these drawings:

La bugia mette maschera

Nulla occulta sotto il sole

Occultatrice del vero—

Il foco è messo per la verità perchè destrugge ogni sofistico e bugia è la maschera per falsità e bugia—. ²⁰⁷

The thematic link between the Turin and the Windsor folios, based on Leonardo's reflection on truth and falsehood, is reinforced by visual correspondences among them—particularly, the

²⁰⁵ Ibid. "Truth-the sun / falsehood-a mask / innocence— / malice / Fire destroys falsehood, that is sophistry, and restores truth, driving out darkness." Modified transl. Richter, *The Notebooks*, 245.

²⁰⁶ Ibid. "Truth. Fire destroys alla sophistry, that is deceit; and maintains truth alone, that is gold. / Sophistry. / Truth in the end cannot be hidden, / dissimulation is useless. / Dissimulation is frustrated before so great a judge—." Modified transl. Richter, *The Notebooks*, 245.

²⁰⁷ Ibid. "Falsehood puts on a mask. / Nothing is hidden under the sun. / Concealer of truth—. / Fire is put for truth because it destroys all sophistry and lies; and the mask is for falsehood and lying." Modified transl. Richter, *The Notebooks*, 245.

light sketch of flames on the *recto* of RL 12,700 and what we identified as the ‘burning insect’ on the *verso* of the same folio might both be considered as sketches for the emblem of the moth.

Cesare Ripa’s *Iconologia* (1593) widely documented the multifarious use of the mirror, the mask, and the sun in allegorical illustrations.²⁰⁸ Here, the mirror is both the tool of the ignorant to represent Satisfaction or Gratification, and that of *disegno* to signify artistic imagination.²⁰⁹ Falsehood is a young ugly woman adorned with various masks—which denote both the Art of Deceit and Imitation.²¹⁰ The sun, on the contrary, represents Truth and Clarity that illuminate everything in the world²¹¹ and, coupled with the mirror, is a symbol of Original Love.²¹²

Closer to Leonardo are the emblems of the mirror and the sun documented in Bargagli, which are similarly associated to the theme of love and considered as the perfect composition of artificial and natural bodies.²¹³ The first of Bargagli’s *imprese* on the sun and the mirror depicts the sunrays beating a concave mirror with the motto *SPLENDOR UNIUS, ALTERI ARDOR* (‘One’s shining, the other’s burning’). This emblem shows that the virtue emanating from a beautiful

²⁰⁸ Cesare Ripa’s *Iconologia* is an extremely successful allegorical dictionary of virtues, arts, and parts of the world that was first published in Rome in 1593 and dedicated to Anton Maria Salviati. This first edition had no illustrations. The second edition, dedicated to Lorenzo Salviati, was published in Rome in 1603, and contained 684 concepts and 151 woodcuts. In this manuscript I refer to Cesare Ripa, *Iconologia* (Venice: Cristoforo Tomassini, 1645). Cf. Rune Pettersen, “Renaissance Emblem Books,” *Journal of Visual Literacy* 36 (2017): 77-89.

²⁰⁹ Ripa, *Iconologia*, 18, 24.

²¹⁰ *Ibid.*, 11, 40. The mask also appears to represent Loyalty, 49; and Death, 53.

²¹¹ *Ibid.*, 13, 78.

²¹² *Ibid.*, 54. Ripa’s mirror, together with a square and a compass is used to illustrate Perfect Work, 57; with an arrow, to symbolize Prudence, 63; with a triangle, to denote Science, 67.

²¹³ Bargagli, *Dell’imprese*, 342-44, 395-96.

woman illuminates her lovers' heart, such as the sunrays reflected in the mirror light up the fire.²¹⁴ The second *impresa* belongs to Niccolò di Tommè Gori and shows a sun reflected into a mirror with the motto *RECEPTUM EXIBET* ('It displays a devotion'). Niccolò means that love rules his actions because the effigy of his beloved is carved in his heart.²¹⁵ Bargagli's analysis of the image of the sun impressed in the mirror offers further reflections that are aligned with Leonardo's allegory:

Qual cosa veggiamo noi nel nostro in quello specchiarci, o noi stessi; oppure l'immagin nostra: essendo in cio varie de' belli ingegni l'opinioni, dove saria forte convenuto ricercar di quell'altra dubbitazione, se 'l veder nostro si cagioni, o per opera delle spezie che intenzionali addimandano delle cose, che vengono a trovare gli occhi nostri; ovvero de' raggi, che da gli occhi uscendo vadano a prendere le' dette spezie, et a quelli riportarli: di che ancora contendono le scuole de' filosofi; od in qual altra guisa si cagioni in noi il nostro vedere.²¹⁶

The theme of looking into the mirror is also found in one of Leonardo's fables, in which the artificial object becomes the main protagonist. It is fable 6, recorded on folio 44v from Codex Forster III:

Lo specchio si groria forte tenendo dentro sé specchio la regina e, partita quella, lo specchio riman vile (*fab. 6.*)²¹⁷

²¹⁴ Ibid., 343.

²¹⁵ Ibid., 394-95.

²¹⁶ Ibid., 396.

²¹⁷ Leonardo da Vinci, Cod. For. III, fol. 44v; *Scritti letterari*, Marinoni, ed., n. 51. "The mirror boasts loudly when it holds the reflected image of a queen; but when she is gone, the mirror remains ignoble." Transl. Marsh, *Renaissance Fables*, 281. Vecce already noted that Leonardo's mirror recalls Alberti's fable 16 (of the glass on the altar). Cf. Leonardo da Vinci, *Scritti*, Vecce, ed., 68; Vecce, "Leonardo e il 'paragone' della natura," in *Leonardo on Nature*, Frosini and Nova, eds., 187. According to Marsh: "The phrase *riman vile* recalls Guido Guinizelli's famous poem, *Al cor gentil reimpaira sempre amore*,

In the fable, the mirror claims ownership of the image of the queen, which is revealed to be only a mere reflection—another ‘false light.’

According to Vecce, this is the same mirror mentioned by Leonardo in one of his later texts modelled on Ovid’s *Metamorphosis*,²¹⁸ on folio 195r from Codex Atlanticus:

Elena, quando si specchiava, vedendo le vizzo grinze del suo viso fatte per la vecchiezza, piagne e pensa seco perchè fu rapita due volte.²¹⁹

In a play of literary associations, the double kidnapping of Elena can be easily connected to her disappearance in the fable. Furthermore, this text refers to the metamorphosis of the queen’s physical traits—that is, the grotesque transformation of an angelic face into a caricature mask, due to the passing time. Curiously, in Forster III, few pages after the fable of the mirror (fol. 72r), we find precisely a caricature of an ugly old woman, labelled with the Petrarch verse: “cosa bella mortal passa e non dura” (‘beautiful mortal thing passes and does not last’).²²⁰

which describes how mud, heated by the sun, remains ignoble: vile reman.” Cf. Marsh, *Renaissance Fables*, 281.

²¹⁸ Romano Nanni, recently supported by Vecce, identified the Ovidian edition that Leonardo probably had at his disposal in Arrigo Semintendi’s *Ovidio Metamorphoseos* (c. 1330). Cf. Romano Nanni, “Ovidio Metamorphoseos,” *Letteratura italiana antica* 3 (2002): 375-402; Vecce, “Leonardo e il ‘paragone’ della natura,” in *Leonardo on Nature*, Frosini and Nova, eds., 198-99. According to Descendre, Leonardo had in his library the vernacular edition of the text by Giovanni Monsignori: *Ovidio Metamorphoseos volgare* (Venice, 1497). Cf. Descendre, “La biblioteca di Leonardo,” 1.

²¹⁹ Leonardo da Vinci, Cod. Atl., fol. 195r. Cf. Vecce, “Leonardo e il ‘paragone’ della natura,” in *Leonardo on Nature*, Frosini and Nova, eds., 199. Here is the original text by Semintendi: “Elena, quando ha vedute nello specchio le vizzo del suo volto, fatte per la vecchiezza, piagne, e pensa seco perch’ella fu presa due volte.” *Gli ultimi cinque libri delle Metamorfosi d’Ovidio volgarizzati da ser Arrigo Simintendi da Prato* (Prato: 1850), 92.

²²⁰ Leonardo da Vinci, Cod. For. III, fol. 72r. My translation. Cf. “Leonardo e il ‘paragone’ della natura,” in *Leonardo on Nature*, Frosini and Nova, eds., 203, 205; Petrarch, *Rerum vulgarium fragmenta*. CCXLVIII, 8.

In the emblematic sketches from the Windsor drawing, we clearly witness a transformation of the same kind: from the octagon to the circle, from the circle to the square, from the square to the pyramid, and from the queen to the mask (Figure 2-30). This transformational method is probably drawn directly from Ovid:

E la natura rinnovatrice delle cose rende dall'altre cose altre figure: e credetemi, che niuna cosa perisce nel mondo, ma isvariasi, e rinnova la faccia: e chiamasi nascere lo incominciare ad essere altro che quello che fu prima; e chiamasi il morire il finire d'essere quello che era prima; con ciò sia cosa che forse quelli elementi sieno tramutati qua, e questi cola; ma pure siano fermi nel loro stato.²²¹

The geometrical diagrams on the Windsor folio are attempts at squaring the circle and calculating the height of the pyramid, which anticipate the allegorical drawings and recur in proximity to fables and emblems of various kinds.²²² Ultimately, they mainly share recurrent textual and visual motifs of the beginning and the end of an event (or a form) to testify Leonardo's cyclical attempt—scientific, literary and artistic—to reach the 'true' representation of Nature.

²²¹ *Gli ultimi cinque libri delle Metamorfosi*, 92. Cf. Vecce, "Leonardo e il 'paragone' della natura," in *Leonardo on Nature*, Frosini and Nova, eds., 202.

²²² Bambach, *Leonardo da Vinci: Master Draftsman*, 574.

3. WORD-AND-IMAGE MECHANISMS

Molte volte una medesima cosa è tirata da due violenzie, cioè necessità e potenza. L'acqua piove, la terra la sorbisce per necessità d'omore, e 'l sole la svelle non per necessità ma per potenza.¹

Leonardo's *oeuvre* provides ample evidence of an aesthetic and philosophical project for the creation of visual and textual syntaxes. Particularly, his fables and emblems illustrate distinctive frameworks for studying the workings of Nature, as well as for representing the tensions between Nature and artifice. In their composition, Leonardo certainly paid his debt to the relevant literary-artistic tradition—from Aesop and Pliny, to Cecco d'Ascoli and Burchiello. However, it appears that he concurrently shaped his fables around empirical observations and technical-scientific studies—pertaining, in particular, to the mechanical arts. Leonardo's knowledge of mechanical arts acted on his composition of fables and emblems on multiple levels: it influenced their themes, structures and meaning in order to eventually turn them into 'mechanical metaphors.'

In his recent work unfortunately left unfinished to us, Romano Nanni² brilliantly understood the intimate tie between Leonardo's reflection on pictorial representation and his practice within the mechanical arts:

¹ Leonardo da Vinci, Cod. Triv., fol. 39r.

Why discuss Leonardo and the *artes mechanicae*, rather than Leonardo the engineer, architect, or technologist? Nor for historical or philological coquetry. Nor is just a matter of avoiding the repetition of titles that have been turning points in Leonardo studies. The point of departure for the present work is the need to grasp the historic sense of Leonardo's work in the ambit which, by training or affinity, best suited him: that of the mechanical arts, a distinct hierarchy of activities and forms of practical knowledge that was subordinate to the liberal arts and to the culture of the erudite.³

According to Romano Nanni, mechanics is the science that better defines Leonardo's activity. In addition, he argues, mechanical arts are comprised in Leonardo's definition of painting as based on experience, theory, and praxis. This assumption derives from a draft for a preface dated at 1490 that Leonardo wrote on folio 323r of the Codex Atlanticus, perhaps in an attempt to decline a more difficult *paragone* of the Arts:⁴

Se bene come loro non sapessi allegare gli altori, molto maggiore e più degna cosa allegherò allegando la sperienza, maestra ai loro maestri. Costoro vanno sconfiati e pomposi, vestiti e ornati non delle loro, ma delle altrui fatiche e le mie a me medesimo non concedano. ~~costoro~~ E se me inventore disprezzeranno, quanto maggiormente ~~da noi~~ loro, non inventori ma trombetti e recitatori ~~potranno~~ delle altrui opere, <p>otranno essere biasimati—.

Proemio

È da essere giudicati ~~non altrimenti omini invento~~ e non altrimenti stimati li omini, inventori e 'nterpreti tra la natura e gli omini, a comparazione de' recitatori e trombetti dell'altrui opera, quant'è dall'obietto fori dello specchio alla similitudine d'ess'obietto apparente nello specchio, che uno per sè è qualche cosa è l'altro è niente. Genti poco obrigati alla natura, perché sono sol d'accidental vestiti d'~~accidentali~~ ~~essenza~~ e senza il quale potrei accompagnarli infra li armenti delle bestie.⁵

² Romano Nanni passed away before he could complete his article "Leonardo and the *Artes Mechanicae*," which was therefore published in its unfinished version. Cf. Romano Nanni, "Leonardo and the *Artes Mechanicae*," in *Illuminating Leonardo*, Moffat and Tagliagamla, eds., 215-20.

³ Ibid., 215.

⁴ Ibid., 217.

⁵ Leonardo da Vinci, Cod. Atl., 323r. The passages are transcribed including Leonardo's cross references

In Nanni's reading of the passage, Leonardo affirms the superiority of the inventor by contrasting it with the *trombetti e recitatori* ('windbags and imitators'), interpreted as rhetoricians and commentators of ancient texts of physics and mechanics.⁶ Suitably, Luca Pacioli used the term 'invention' in relation to 'inventors of machines' in his *Divina proportione*—written in 1498 in Milan, side by side with Leonardo.⁷ One must keep in mind that this passage is an attempt to compose a *proemio* and, therefore, it is intended for a treatise. Whatever treatise this would have been, Leonardo arguably conceived it in defense of mechanical engineering.⁸

According to Nanni, this folio is "entirely devoted to mechanical issues"⁹ and connected with folios 322r and 324r. These certainly relate to studies of mechanics. The first of the series (fol. 322) shows technical drawings of beams and pulleys, and corresponding notations on the proportions between the weight of a beam and the angle of the cord holding it. The last one (fol. 324), on the *verso*, contains a sketch with similar notations, and on the *recto* two very interesting scientific observations that refer to the world as a *terrestre macchina* ('terrestrial machine'):

Truovo la *forza* essere infinita insieme col tempo, e 'l *peso* essere finito insieme col peso di tutto il globo della terrestre machina—.

Truovo il *colpo* d'indivisibile tempo e *moto*, el movimento di molte varietà. Cioè natural, accidentale e partecipante: el quale partecipante finisce la sua somma potenza dove e' si

to other texts (+) and lines indicating the text conclusion (—).

⁶ The term *trombetti* refers to literary humanists as mere transcribers of texts who repeat stereotyped formulas without producing knowledge. According to Leonardo, they perform a parasitic activity of mirroring ancient works without relying on experience.

⁷ Cf. Vecce, *La biblioteca perduta*, 88.

⁸ Cf. Nanni, "Leonardo and the *Artes Mechanicae*," 217.

⁹ Ibid.

tramuta di accidentale in naturale, ch'è nel mezzo del suo corso. El naturale è più potente nel fine che in nessun altro loco, l'accidentale è più forte nel terzo e più debole nel fine—. ¹⁰

Here, Leonardo notes his findings on the four categories at the basis of every physical phenomenon according to classical mechanics: 'force' (*forza*), 'weight' (*peso*), 'percussion' (*colpo*) and 'motion' (*moto*).¹¹ Then, in lighter ink, he instructs himself on the structure of what could have been part of a treatise focusing on these categories or 'four powers':

Tratterai prima del *peso*, poi del *moto* che partorisce la *forza*, e po' d'essa forza e in ultimo del *colpo*.¹²

Now that we have collected enough evidence for Leonardo's planning a treatise aimed at ennobling the *artes mechanicae*, we should move back to folio 323r, which indeed seems more linked to a literary attempt than to what can be generally regarded as a 'mechanical issue.'

In fact, folio 323r features few ink traces ostensibly composed at the same time of the preface that Nanni did not address. On the bottom half of the page, on the right, Leonardo writes once more *proemio* ('preface'), followed by the word *facezia*, in a manner that recalls a sophisticated attempt of pagination (Figure 3-1). On the left, he continues precisely with one of his fables:

¹⁰ Leonardo da Vinci, Cod. Atl., 324r. Emphasis mine.

¹¹ For an exhaustive discussion of Leonardo's notion of 'force' and examination of the 'four powers,' see Andrea Bernardoni, "Elementi, sostanze naturali, atomi: osservazioni sulla struttura della materia nel Codice Arundel di Leonardo," and Fabio Frosini, "Il concetto di forza in Leonardo da Vinci," in *Il Codex Arundel di Leonardo*, Bernardoni and Fornari, eds., 77-114, 115-128; Andrea Bernardoni, "Del colpo la cagion del fuoco." *Un dialogo tra filosofia naturale e arti meccaniche nei manoscritti di Leonardo* (Florence: Giunti, 2016). Cf. also Vecce, *La biblioteca perduta*, 89.

¹² Leonardo da Vinci, Cod. Atl., 324r. Emphasis mine.

favola

I tordi si rallegrarono forte, vedendo che l'omo
prese la civetta e le tolse libertà, quella legando
con forti legami a sua piedi. La qual civetta fu
poi, mediante il vischio, causa non di far
perde<re> la libertà ai tordi, ma la propria vita.
Detta per quelle terre che si rallegran di perdere
la libertà ai loro maggiori, mediante i quali poi
perdano il soccorso e rimangono legati in
potenzia del loro nemico, lasciando la libertà e
spesse volte la vita (*fab.* 35.)¹³

proemio

facezia

By looking at the disposition of the words in the space of the page, we can easily envision the framework for a book, in which a preface would have been followed by a fable and a *facetia*.¹⁴ Leonardo opens this umpteenth unfinished book with a *proemio* celebrating his uniqueness as inventor based on experience in opposition to mere literary imitation. Then he uses fables and *facetiae*—considered as Leonardo's major literary endeavor—to embellish and reinforce his argument. This clever stratagem would have allowed him to smear the hated rhetoricians by means of their own 'literary weapons.'

¹³ Leonardo da Vinci, Cod. Atl., 323r; *Scritti letterari*, Marinoni, ed., n. 27. "Fable. / The thrushes rejoiced greatly at seeing a man capture the owl and take away its freedom by binding its feet with strong fetters. But later the owl, together with a fowler's bird-lime, caused the thrushes to lose not only their freedom, but their lives as well. / This applies to those towns that rejoice when they see their leaders lose their freedom. Yet the same leaders later cause the towns too lose hope of relief and to be bound by the power of their enemies, forfeiting their freedom and often their lives." Transl. Marsh, *Renaissance Fables*, 305.

¹⁴ Leonardo's collection of *facetiae* is the less homogeneous among Leonardo's writings from the Sforza period. The earlier *facetiae* were completed during the 1490s, similarly to his fables. Leonardo probably annotated *facetiae* that he heard at the il Moro's court; therefore, it is often difficult to locate their sources. These compositions belong to a popular tradition during the Italian Quattrocento, both vernacular and Latin. Leonardo owns in his library two exemplars belonging to this tradition: Poggio Bracciolini's *Facezie* and *Manganello*. Cf. Leonardo da Vinci, *Scritti*, Vecce, ed., 139; Vecce and Cirnigliaro, *Leonardo: favole e facezie*, 7-15; Vecce, *La biblioteca perduta*, 139-40.

The fable might be read in light of Leonardo's attempt toward a re-legitimation of hierarchical relations between areas of knowledge. Because the thrushes laugh at the owl's misfortune, the owl kills them by means of the birdlime. The occasion is arguably drawn from Aesop's fable 137, in which an asp bites a bird catcher while he is trying to catch a thrush. The Aesopian moral admonishes those who undermine their neighbors: mishap will strike them before their victims.¹⁵

Leonardo, curiously turned the persecuted thrush into the persecutor, and modified the moral to suggest a political allegory. In fact, the fable could refer to the capitulation of Milan invaded by the French in 1499 and Ludovico il Moro's defeat that constrained Leonardo to leave the city.¹⁶ As outlined in the preceding preface, the *trombetti* are not good interpreters of Nature because they just imitate the *auctoritates* and completely rely on them. Leonardo is, instead, the great inventor and interpreter of Nature who uses experience to transform his models, as demonstrated in his rewriting of Aesop in reference to historical events.

The alignment of *proemio* and fable allows us to further address the meanings of interpretation. Pliny's *Naturalis Historia* records that in order to make good birdlime, thrushes have to macerate mistletoe in their stomach—and this is why Leonardo's thrushes regret to be

¹⁵ Aesopus Scr. Fab. et Aesopica, *Fabulae*, 167. The thrush appears also in the Aesopic fable 157. Here, the bird catcher captures the thrush because the bird is distracted eating from a myrtle bush. *Ibid.*, 183.

¹⁶ Fumagalli, *Leonardo prosatore*, 43; Marco Versiero, *Leonardo, la politica e le allegorie*, 92. See also Vecce and Cirnigliaro, *Leonardo da Vinci: favole e facezie*, 30.

captured through the birdlime that they themselves produced.¹⁷ Without directly displaying his sources, Leonardo turns the literary clichés, which the same *trombetti* fashioned, back against them. It is not a case that beside an Alciato's *impresa* modeled on the Aesopian fable of the thrush the *motto* "Qui alta contemplantur cadere" ('those who contemplate the heights come to grief') honors individuals who feel offended by their neighbors (Figure 3-2).¹⁸ Furthermore, this *motto* is accompanied by an illustration that perfectly corresponds to Leonardo's sketch for the emblem of the goldfinch feeding its sons with poison, labeled *corta libertà* ('brief liberty') (Figure 3-3).¹⁹

Without trying to exhaust the meaning of very complex word-and-image interrelations, I would only recall that Leonardo, in the aforementioned *proemio*, attributes the mere imitators of ancient texts as 'dressed with artifice.' When missing their ornaments, these imitators are

¹⁷ This Plinian source is recorded in Scipione Bargagli's treatise *Dell'impresa*, 300.

¹⁸ The original Latin text commenting the illustration reads: "Dum turdos visco, pedica dum fallit alaundas, / Et iacta altivolam figit harundo gruem, / Dipsada non prudens auceps pede perculit: ultrix / Illa mali, emissum virus ab ore iacit. / Sic obit extent qui sydera respicit arcu, / Securus fati quod iacet aute pedes." Alciato, *Emblemata*, 83. An *impresa* featuring a thrush with the motto TACITURNIOR TURDO is recorded in Bargagli (Ibid., 226). In addition, Bargagli refers to the Aesopic fable of the thrush as a good source of *impresa*, as anticipated in Chapter Two: "Simil favola potrebbe servire a manifestare in Impresa concetto d'alcuno, che di suo dolore fosse stato ministro, o che da proprio figliuolo, od allevato suo, od amato avesse sentito alcuno grave male, et oltraggio." Ibid., 300.

¹⁹ Leonardo da Vinci, Ms. H, f. 63v: "Il calderigio dà il tortomalo a' figlioli ingabbiati.—prima morte che perdere libertà." ("The goldfinch gives spurges to its young when they are caged.—Death rather than loss of liberty." Transl. Venerella, *Manuscript H*, 69.) The theme of the liberty loss inspires the famous note on Ludovico il Moro's fall in 1499: "Il duca perso lo stato e la roba e la libertà." (Ms L, back cover v.) Cf. Vecce and Cirnigliaro, *Leonardo da Vinci: favole e facezie*, 30. In addition, the label "prima morte che perdere libertà" recalls the *motto* "prima morte che stanchezza" ('death rather than weariness') in Leonardo's emblem of the lily. Cf. Chapter Two, paragraph 2.2.1.

compared to beasts and a useless mirror that lacks a reflected object. This brings us back to Leonardo's fable of the queen and the mirror:

Lo specchio si gloria forte tenendo dentro sé specchio la regina e, partita quella, lo specchio riman vile (*fab. 6.*)²⁰

In Leonardo's view, mirrors and 'windbags and imitators' are nothing without their artifice (*accidental*). With the word 'artifice' Leonardo means the mere copy of literary *auctoritates* such as Pliny and Aesop and—if we draw on Nanni's interpretation—the model of ancient texts of physics and mechanics. Leonardo might also refer directly to the mechanical arts, that is, his own works (*fatiche*) in civil and military engineering that practically served the Italian State.²¹

On the *verso* of the folio, there is a final note about how to endure injuries, such as lack of artistic recognition:

La pazienza fa contra alle 'ngiurie non altrimenti che si faccino i panni contra al freddo. Imperò che se ti moltiplicherai di panni secondo la moltiplicazione del freddo, esso freddo nocere non ti potrà. Similmente alle grande ingiurie cresci la pazienza. Esse ingiurie non potranno offendere la tua mente.²²

Leonardo's solution for tackling these offences is nurturing patience and studying the *auctoritates* himself. This is perfectly understood in a context of underestimation for the mechanical arts and praise of low-end literature, as depicted by Giuseppina Fumagalli:

²⁰ Leonardo da Vinci, Cod. For. III, fol. 44v; *Scritti letterari*, Marinoni, ed., n. 51. "The mirror boasts loudly when it holds the reflected image of a queen; but when she is gone, the mirror remains ignoble." Transl. Marsh, *Renaissance Fables*, 281.

²¹ In his presentation letter to Ludovico il Moro, Leonardo introduced himself as a military engineer, and his military projects are very well documented by the critics. Cf. Augusto Marinoni, "Leonardo's Impossible Machines," in Galluzzi, *Leonardo Engineer and Architect*, 111-29.

²² Leonardo da Vinci, Cod. Atl., 323v.

Bernardo Bellincione, un poetucolo buffone e adulatore, poteva, sì, rivolgersi al Duca o al Moro, con insolente familiarità, ma un artista era, a quei giorni, tenuto ancora non molto più che un artigiano.²³

According to Fumagalli, Ludovico il Moro considered Leonardo more as an engineer than as an artist capable of delighting the court with beautiful *imprese* as brazen intellectuals could do. We might not completely agree with this interpretation, but the tension between humanists and artist-technicians in face of the explosion of technical literature is a matter of fact at the end of the fifteenth century, as attested by documents of the time.²⁴

Leonardo's literary-artistic attention to the mechanical arts is motivated by his "irrepressible passion for mechanics, through the practice and science of the world of machines."²⁵ In addition, it presupposes a shifting context for the *artes mechanicae* as embracing a sphere of noble activities that cannot be merely reduced to the practical fields of architecture and military engineering, painting and sculpture.²⁶

Furthermore, Leonardo's attempt to combine humanistic culture with the mechanical arts in innovative textual and visual modes of expression is not an isolated case in the early modern workshop. His aesthetic and philosophical project had a close relationship with contemporary scientific thought. The overestimation of Leonardo's discoveries based on his

²³ Fumagalli, *Leonardo prosatore*, 348-49.

²⁴ Ibid., 139. Cf. Francesco Malaguzzi Valeri, *La Corte di Ludovico il Moro* (Milan: Hoepli, 1913), 586; Nanni, "Leonardo and the *artes Mechanicae*," 219-20; Loporini, *La mente di Leonardo*, 22.

²⁵ Nanni, "Leonardo and the *artes Mechanicae*," 217.

²⁶ Ibid.

interpretation as romantic genius was extended in Paolo Galluzzi's study of the connection between Leonardo's scientific-technical projects with those of his contemporaries. According to Galluzzi, Leonardo represented the culmination of a century-long transformation of the technical arts and those who practiced them.²⁷

In this final chapter, I show that Leonardo's studies of mechanics provided him with a preferred method to investigate and represent natural processes. In addition, mechanical tools are not only exclusive subjects for political *impresa*, but also assisted Leonardo to formulate and promote his re-evaluation of painting and the mechanical arts. The first section of the chapter, *Leonardo inventore: Sources and Tools* (3.1) reveals that Leonardo's manner of combining words and images in relation to mechanical studies has a parallel in the work of contemporary artist-technicians. Initially, I locate Leonardo's technological works and his project for a treatise on mechanics in the early modern context of hierarchical tensions between humanistic procedures and technical forms of knowledge (3.1.1). Then, I compare Leonardo's *oeuvre* with that of

²⁷ Galluzzi, *Leonardo Engineer and Architect*, 41-43. See selected bibliography on this topic: Bertrand Gille, *Renaissance Engineers* (London: Lund Humphries, 1966); Ladislao Reti, "Francesco di Giorgio Martini's Treatise on Engineering and Its Plagiarists," *Technology and Culture* 4 (1963): 287-98; Mariano Taccola, *De Machinis*, Gustina Scaglia, ed. (Wiesbaden: Ludwig Reichert Verlag, 1971); Mariano Taccola, *De Ingeneis*, Gustina Scaglia, ed. (Wiesbaden: Frank D. Prager, and Ulrich Montag, 1984); Gustina Scaglia, *Francesco di Giorgio: Checklist and History of Manuscripts and Drawings in Autographs and Copies from ca. 1470 to 1687 and Renewed Copies (1764-1839)* (Bethlehem, PA: Lehigh University Press, 1992); Steffen Bogen, "Repräsentative Maschinenzeichnungen und Perspektivkunst: Zur Verbindung neuzeitlicher Malerei mit graphischen Sprachen der Technik," in *Konstruierte Sichtbarkeiten: Wissenschafts- und Technikbilder seit der Frühen Neuzeit*, Martina Heßler, ed. (München: Wilhelm Fink Verlag, 2006), 131-152: 145; Steffen Bogen, "Fließende und unterbrochene Bewegungen: Linien bei Taccola," in *Öffnungen. Zur Theorie und Geschichte der Zeichnung*, Friedrich Teja Bach and Wolfram Pichler, eds. (Munich: Wilhelm Fink Verlag, 2009): 241-60.

contemporary artist-technicians, such as Mariano Taccola and Giuliano da Sangallo. Taccola's graphic model based on the simultaneous representation of causes and consequences of a situation is ostensibly at the basis of Leonardo's development of fables into emblems (3.1.3). In addition, the creation of a cause-effect model in the form of an emblem often had a sculptural destination, as illustrated in Sangallo's sculptural reliefs for the Gondi Palace's staircase (3.1.2).

In the second section, *Phenomena, Models, Mechanical Metaphors* (3.2), I examine Leonardo's employment of fables in order to combine his technical and artistic skills, empirical observation and experience. The fables simultaneously represent natural transformations and ennoble the work of artist-technicians. Through case studies on the fables of the crab and the oyster, I analyze Leonardo's modeling of fables on the mechanical interaction of forces at the basis of every physical phenomenon (3.2.1). Then, I show that Leonardo's fables deal directly with categories derived from mechanical theory—such as 'force,' 'motion,' 'weight,' and 'percussion'—and illustrate the functioning of wheels, pulleys and screws in applied mechanics (3.2.2). As a result, Leonardo's fables and emblems become 'mechanical metaphors' to investigate and represent natural processes that pave the way toward the re-evaluation of painting and the mechanical arts (3.2.3).

3.1. Leonardo *inventore*: Sources and Tools

3.1.1. Artes mechanicae

In order to fully understand the relationship between Leonardo's creative projects and the mechanical arts, we should rethink the *artes mechanicae* as a hierarchy of activities subordinate to the liberal arts and erudite culture.²⁸ As Romano Nanni argued, Renaissance humanists strived to appropriate the universe of practical knowledge belonging to the handcraft tradition by dignifying and including it in the realm of speculative philosophy. At the same time, this humanistic act of inclusion was also aimed at containing the ascent of the artist-technicians.²⁹ Leonardo's approach to mechanics and the arts is situated within these "many facets of the relationship between the ideology of the *artes*, humanism, forms of knowledge and techniques in early Renaissance civilization."³⁰

²⁸ Cf. Romano Nanni, "The disputation about the arts in the mirror of Angelo Poliziano's *Panepistemon*," in *Leonardo and the Artes Mechanicae*, Nanni ed., 15-29; Nanni, *Leonardo e le arti meccaniche*, 9; Marco Faini, "Romano Nanni: Leonardo e le arti meccaniche," *La Rassegna della Letteratura Italiana* 119, n. 9 (2015): 442-45; Luporini, *La mente di Leonardo*, 22.

²⁹ Nanni based his observation on the analysis of Angelo Poliziano's *Panepistomon*, a text "lying on the boundary between humanistic circles and those of the artists and technicians of the fifteenth century." Nanni, "The disputation about the arts," in *Leonardo and The Artes Mechanicae*, Nanni ed., 15. According to him, Poliziano only included one part of the *artes mechanicae* in practical (speculative) philosophy, those connected "to the concept of machine as a marvel, as a work running against nature and therefore marvelous—namely, that which stemmed most directly from the ancient literary tradition, in particular the Aristotelian or pseudo-Aristotelian one." Nanni, "The disputation about the arts in the mirror of Angelo Poliziano's *Panepistemon*," in *Leonardo and the Artes Mechanicae*, Nanni ed., 19.

³⁰ *Ibid.*, 16.

In the preface to his *Divina proportione*, Luca Pacioli recalls a “laudabile e scientifico duello” (‘memorable scientific duel’) that took place on February 8 1498 in the Sforza Castle at the presence of the Duke of Milan. This was a *paragone* between illustrious philosophers, architects, engineers, and inventors, which testified to the tensions among humanistic culture and the domain of technology. In the words of Pacioli, Leonardo unquestionably surpassed the other participants. Besides, Leonardo realized such beautiful drawings of polyhedrons for his *Divina Proportione*, that Pacioli highly praised his technique in the *incipit* of his treatise. These verses, particularly dear to Leonardo, are recalled in his Manuscript M:³¹

Terzetto facto per li corpi regolari e loro dirivativi.
El dolce fructo vago si diletto
Costrinse già filosafi a cercare
Causa di noi per pascere lo intelletto.³²

As noted by Vecce, Leonardo uses the same word *fructo* when he leaves his definition of mechanics in one of his later codices, Manuscript E:

La meccanica è il paradiso delle scienze matematiche, perchè con quella si perviene al frutto matematico.³³

³¹ Cf. Pietro Marani, “Leonardo’s Cartonetti for Luca Pacioli’s Platonic Bodies,” in *Illuminating Leonardo*, Moffat and Tagliagamla, eds., 69-84; Pietro Marani, “The Movements of the Soul: From Leon Battista Alberti to Leonardo da Vinci,” in *Leonardo da Vinci 1452-1519: The Design of the World*, Pietro C. Marani and Maria Teresa Fiorio, eds., 230; Vecce, *La biblioteca perduta*, 88-89.

³² Leonardo da Vinci, Ms. M, fol. 80v. “Tercet made for the regular bodies and their derivatives. / The sweet fruit, charming and so well-beloved, / Compelled so philosophers of the past to seek / Our causes, to nourish the intellect.” Transl. Venerella, *Manuscript M*, in *The Manuscripts of Leonardo da Vinci in the Institut de France*, Venerella, ed., 99-100.

³³ Leonardo da Vinci, Ms. E, fol. 8v. “Mechanics is the paradise of the mathematical sciences, because with that, one comes to the fruit of mathematics.” Transl. Venerella, *Manuscript E*, in *The Manuscripts of Leonardo da Vinci in the Institut de France*, Venerella, ed., 20.

Lastly, Pacioli's preface informs us of Leonardo's near completion of a treatise focusing on the *artes mechanicae*: an "opera ineximabile del moto locale de le percussioni e pesi e de le forze tutte cioè pesi accidentali" ('exceptional work on local motion, percussion, weight and all the forces that are called accidental weights').³⁴

In his notebooks, Leonardo made numerous references to specific 'propositions' contained in a treatise on mechanical elements that he compiled, which in 1940 Arturo Uccelli tried to recompose. According to Uccelli, Leonardo's treatise on mechanics was divided in two parts. The first section would have been theoretical, and devoted to the analysis of the 'four powers' or categories at the basis of physical phenomena ('motion,' 'weight,' 'force,' and 'percussion'). The second section would have gathered Leonardo's notes on mechanical elements to illustrate applied mechanics—such as mechanics for pulling and lifting, and the use of pulleys, axles, wheels, and screws.³⁵ The discovery in 1966 of Leonardo's codices Madrid I and II offered completely new material on this topic. Madrid Manuscript I is, in fact, completely indebted to mechanics and comprises clear sections focusing on theoretical and applied mechanics and specific mechanisms. This is why, as Ladislao Reti argued, it began to be considered as Leonardo's treatise on the "elements of mechanics."³⁶

³⁴ My translation. Cf. Vecce, *La biblioteca perduta*, 89.

³⁵ Leonardo's studies of actions discussed in Chapter One might have been included in this second section.

³⁶ Cf. Ladislao Reti, "Elements of Machines," in *The Unknown Leonardo*, Ladislao Reti, ed. (London: Hutchinson, 1974): 264-87.

However, even at present, Leonardo's treatise on mechanics is considered to be in fragmentary form. As Paolo Galluzzi argued, Leonardo's lack of training or ambition led to the failure of his majestic project of revisiting all the arts and sciences in order to establish unified principles and procedures:

He was planning to write general works in each field of knowledge, recording beginnings or tables of contents never followed up [...]. He did not escape the limitations of his early training, maintaining to the end the characteristic 'workshop' style of jotting down brief notes, each unrelated to the others.³⁷

Leonardo's technological studies do not show coherence or continuity. During his Milanese period (1482-99), we record his unflagging interest in hydraulic technology. Additionally, at this time he made his first attempt to write a treatise: it is the book on water documented in Manuscript A.

While developing his career as an engineer, Leonardo was also an artist who strove to achieve a perfect imitation of Nature—which was impossible without a precise understanding of her laws. This is why around 1490-92 he decided to increase his knowledge of optics and mechanics. In this respect, his training followed a precise pattern. First, he would study classical and medieval sources—there is evidence of his search for important texts such as Archimedes, works on the medieval science of weights and books on the impetus theory. Then, he would establish useful contacts with experts of his time—such as the Marianis and

³⁷ Paolo Galluzzi, *Leonardo Engineer: The Career of a Technologist*, in *Leonardo Engineer and Architect*, Galluzzi, ed., 94.

Fazio Cardano. Finally, he would attempt to determine general mechanical principles, testing them in concrete applications.³⁸

Leonardo's work was modeled on classical and medieval statistics and, therefore, was heavily grounded in geometry—which he considered the basic unifying tool for his studies in mechanics. Within this geometrical framework, he attempted to break down into numerically finite catalogues the components that made up the variety of machines intended as 'organisms.' Then, thanks to the art of technical drawing, he was able to reassemble devices with different techniques and observe them from various points of view in geometrical diagrams. After 1500, his mechanical investigation became a model that he attempted to transfer to other fields of research so that the 'four powers' of nature "had come to be seen by him as the cause behind every effect."³⁹ In this perspective, it is not surprising that Leonardo's writing of fables and emblems became a tool to represent the unity of mechanical processes and functions at the basis of different situations.

Leonardo's seminal ideas on mechanics are drawn from medieval manuscripts of French and German tradition and the work of other engineers of his time—in particular, Francesco di Giorgio Martini (1439-1501), whom met in Milan in 1491.⁴⁰ From him, Leonardo derived the idea of drawing as a means of 'invention' to feature extravagant displays for his creations that

³⁸ Galluzzi, *Leonardo Engineer and Architect*, 41-42; 72-73.

³⁹ Leonardo even projected a universal mechanical geography under the influence of Ptolemy. He used a limited number of basic mechanical principles and rigorous geometrical analysis to conceive a new broadly illustrated encyclopedia. Cf. Galluzzi, *Leonardo Engineer and Architect*, 101-01.

⁴⁰ As Galluzzi stated: "Leonardo's career developed within a professional tradition inaugurated by others before him, based on specific knowledge and procedures." Galluzzi, *Leonardo Engineer: The Career of a Technologist*, 43. Cf. Vecce, *La biblioteca perduta*, 88.

emphasize an infinite number of possible design solutions.⁴¹ We know that he carefully studied a parchment copy of Francesco di Giorgio's *Trattato dell'architettura militare et civile* (1482), on which he also wrote brief notes.⁴² However, Leonardo had a distinctly different method than his predecessor. Instead of representing the assembled machine, he sketched many of the separate components in order to show them, and to reflect on how to revise the form, improve the operation and reduce friction.⁴³

Machine drawings were first used by Filippo Brunelleschi between 1418 and 1447 and then appeared in the sketchbooks of many Florentine technical-artists, such as Mariano Taccola, Buonaccorso Ghiberti, Giuliano da Sangallo, the Anonimo Ingegnere Senese and, of course, Leonardo. Leonardo used drawings and texts that he found in the sketchbooks and technical-scientific treatises of his precursors and contemporaries, which featured a broad and graphic apparatus on fabulous machines. This inspired his creative drawings of military technology, and provided him with practical applications of words and images in the field of mechanical engineering that he extended to his investigation of Nature.⁴⁴

⁴¹ This passage clearly explains Francesco di Giorgio's ideas on drawing: "Ultimamente, come nel principio è detto, dato che alcuno nella fantasia avesse ordinate alcun ragionevole edificio ovvero instrumento, volendo quello fare componere e fabbricare, non può senza il disegno esprimere e dichiarare il concetto suo." Francesco di Giorgio, *Trattato I*, 328.

⁴² See Vecce, *La biblioteca perduta*, 93-94.

⁴³ Gustina Scaglia, "A Typology of Leonardo's Mechanisms and Machines," in *Leonardo Engineer and Architect*, Galluzzi, ed., 146.

⁴⁴ *Ibid.*, 92-97.

3.1.2. Taccola's Wells

Clock designs are mechanisms that recur very frequently in Leonardo's notebooks. These designs are notably found in the work of Mariano Taccola, even though Leonardo and Taccola never met. Jacopo Mariano, called Taccola (c. 1382-before 1458), was an engineer from Siena known for his festival machines called *ingegni*. These were fabulous machines to be used in churches with highly theatrical light and sound effects, which Taccola learned from Brunelleschi. Between 1419 and 1433, Taccola wrote his own treatise, *De ingeneis ac edifitiis non usitates*, dedicated to King Sigismund, as he hoped to be employed on waterworks in Hungary.⁴⁵ A compendium of Taccola's *oeuvre* translated into Italian was composed by the Anonimo Ingegnere Senese, and partly included in Francesco di Giorgio's *Opusculum de architectura*. The Ingegnere Senese's document also comprised mechanisms developed after Taccola known as *machine complexes* (hoists, mills, pumps, clocks, haulers, lifts and military devices). As Gustina Scaglia claimed, Leonardo clearly had access to this material.⁴⁶

Among the inventors that possibly influenced Leonardo's *oeuvre*, Taccola is particularly relevant for our analysis. As Steffen Bogen argues, his work had been greatly underestimated by art historians as poor in graphic qualities and technical inventions, and considered nothing more than a reference for Leonardo's hydraulic projects from Manuscript H. On the contrary, Taccola's devices have a lot in common with Leonardo's visual re-elaborations of mechanical

⁴⁵ Cf. Steffen Bogen, "Fließende und unterbrochene Bewegungen," 241-60.

⁴⁶ Cf. Scaglia, "A Typology of Leonardo's Mechanisms and Machines," 147.

principles.⁴⁷ In the first place, contrary to Francesco di Giorgio and other contemporaries, who generally represent the assembled machine in central perspective, both Leonardo and Taccola used the space of the folio to sketch within the same drawing various phases of their projects.⁴⁸ Furthermore, Taccola's projects of machines illustrate a graphic model based on the simultaneous representation of causes and consequences of a situation that is ostensibly at the basis of Leonardo's development of fables into emblems.

Magical atmospheres, pictorial rendering of the subject, and unrealistic perspectives permeate Taccola's drawings—which do not apparently reflect his intimate contact with the work of Brunelleschi, the so-called 'father of perspective.' According to Steffen Bogen, Taccola not only aimed to reproduce his mechanical devices, but also to illustrate the imaginary 'becoming of a project.'⁴⁹ Therefore, his drawings, like Leonardo's, do not properly belong to the history of technology, but to a 'particular art history' focusing on the representation of mechanical processes:

Indem der graphische Prozess in Analogie zum Bauen technischer Vorrichtungen gesetzt wird, können Elemente der graphischen Tätigkeit neu gedacht werden: das Setzen und Anordnen von konstruktiven Elementen und das imaginäre Antizipieren von Bewegungen.

⁴⁷ Galluzzi, *Leonardo Engineer and Architect*, 57-58, 74-79; Bogen, "Fließende und unterbrochene Bewegungen," 241-43.

⁴⁸ According to Nanni, Francesco di Giorgio introduced a rationalized drawing technique based on central perspective. This representation did not allow the understanding of different parts of the machines and their proportional relationships. The peculiarity of Leonardo was exactly the employment of different graphic solutions and modes of representations. Cf. Nanni, *Leonardo e le arti meccaniche*, 135-61.

⁴⁹ Bogen, "Fließende und unterbrochene Bewegungen," 243.

Ziel der graphischen Fertigung kann dann nicht nur der Bau einer effektiven Maschine, sondern das imaginäre, in Betrieb nehmen‘ der Papiermaschine selbst sein.⁵⁰

For instance, on folio 87r from his treatise, Taccola illustrates the function of a well that is activated by the wind (Figure 3-4). Taccola draws an unrealistic perspective by combining details of the well from different planes. The folio is surrounded by observational drawings regarding the well’s location and studies of traction. The written note *maniglie* reorders the elements on the sheet and is crucial for interpreting the dynamics concerning the well’s activation.⁵¹

Leonardo’s drawing of a well on fol. 43r of Manuscript H also features accompanying details of its construction, related mechanical studies of weight, and a representation of the current similar to that of Taccola’s wind. The only difference is that Leonardo’s sketches leaned more toward a truthful representation, while Taccola introduced imaginary details to explain the machine functioning—such as the unrealistic head blowing the wind in the direction of the suggested motion. Leonardo’s innovation consisted, in fact, in making traditional forms more credible and realistic.⁵² As Marinoni claimed, “Leonardo was the heir of the dreams of Taccola,

⁵⁰ “By creating an analogy between the drawing process and the construction of mechanical devices, it is possible to re-interpret the terms belonging to the drawing activity: the recording and ordering of the constructive elements, and the imaginary anticipation of movements. Therefore, the aim of the drawing is not only the construction of a real machine, but the imaginary ‘putting into motion’ of the paper machine.” Bogen, “Fließende und unterbrochene Bewegungen,” 243. My translation.

⁵¹ Ibid., 249.

⁵² Cf. Steffen Bogen, “Repräsentative Maschinenzeichnungen und Perspektivkunst” in *Konstruierte Sichtbarkeiten*, Martina Heßler, ed., 131-152: 145.

Fontana, Guido da Vigevano and others anonymous inventors.”⁵³ He developed their studies, refining the treatment of mechanical detail in order to create more convincing images that “had moved out of the realm of fantasy and into the realm of potential realization.”⁵⁴

In this respect, particularly striking is the drawing on folio 20r of Taccola’s manuscript that illustrates a machine similar to a pile driver in the moment of hitting a ship (Figure 3-5). The gradual breakage of the ship bow is signaled by the position of the three machine poles—respectively, inside, halfway in, and about to enter the bow. In addition, Taccola shows the action of the current with delicate lines suggesting the mild movement that anticipates the bow’s fluctuation. Finally, under the bow, he creates a tiny vortex of lines to signify the bouncing of the water against the ship when hit by the machine. In this way, Taccola blends in one drawing both the constructive and dynamic features of his machine. Furthermore, he clearly explains a basic mechanical principle: when a force extends in space, it has to give way to another force. The indented line that separates the second pole from the bow corresponds to the wood crushing. It summarizes the causes and the consequences of a situation in the same manner as Leonardo’s fables and emblems of the lily and the spider do.⁵⁵

Taccola’s works combined empirical observation, illustration of machines’ mechanisms, and artistic interpretation. Leonardo’s sheets, aimed at the representation of Nature, showed a

⁵³ Augusto Marinoni, “Leonardo’s Impossible Machines,” in *Leonardo Engineer and Architect*, Galluzzi, ed., 118.

⁵⁴ Ibid.

⁵⁵ Cf. Bogen, “Fließende und unterbrochene Bewegungen,” 251-53.

similar use of drawing for the exact depiction of a process, more than for a realistic, functional, and merely aesthetic production. By means of scientific and artistic tools, Leonardo and Taccola could record either scientific data (the behavior of the lily when subjected to the force of the current) or a scientific project (a well), and concurrently present the laws of mechanics, physics, and dynamics operating behind them.

3.1.3. Sine lassitudine: *The Lily of Sangallo*

Giuliano da Sangallo's interweaving of textual and figurative imagery in his architectural inventions is a remarkable document for examining employment of fables and emblems by artist-technicians such as Leonardo. Born in 1448 and trained as a *legnaiuolo*, Giuliano was an architect passionate about technical drawing and military architecture, and an antiquity expert.⁵⁶ As Sabine Frommel argued, Leonardo and Giuliano possibly got in touch because of their shared interest in architecture, as they were both trained at Verrocchio's workshop and belonged to Lorenzo de Medici's *entourage*.⁵⁷ However, after studying Brunelleschi and Francesco di Giorgio's *oeuvre*, they ended up with a slightly different conception of architecture:

⁵⁶ Cf. Sabine Frommel, *Giuliano da Sangallo* (Florence: Edifir, 2014); Sabine Frommel, "Giuliano da Sangallo and Leonardo da Vinci: Cross-Pollination or Paralles?" in *Illuminating Leonardo*, Moffat and Tagliagammba, eds., 85; Gabriele Morolli, "Lorenzo, Leonardo e Giuliano: da San Lorenzo al duomo a Poggio a Caiano; *paralipomeni* architettonici minimi in vista del semimillenario della morte del Magnifico," *Atti della Società Leonardo da Vinci* 3 (1990): 5-4.

⁵⁷ However, as Sabine Frommel stated, "there are no works in Leonardo's *oeuvre* that might testify to an actual cooperation between him and his patron comparable to that between Giuliano da Sangallo and the Magnifico." Frommel, "Giuliano da Sangallo and Leonardo da Vinci: Cross-Pollination or Paralles?" in *Illuminating Leonardo*, Moffat and Tagliagammba, eds., 85.

Giuliano, after leaving Francione's woodworking shop became a skilled builder with a deep knowledge of the Antique, whereas Leonardo persisted in considering architecture as a mental exercise, taking a thoroughly analytical approach to it, and only rarely dealing with projects and designs that would actually be turned into reality.⁵⁸

In 1489-90 Sangallo designed buildings for the most powerful Medici allies with rusticated stone façades that became a customary fashion of the time. And yet, projects of this kind were ignored by Leonardo, for they were probably not in accordance with his vision of Renaissance palaces.⁵⁹ Among Giuliano's works in this trend, two major projects concerned the creation of emblematic sculptural reliefs based specifically on fables.

Sangallo's first sculptural rendering of fables concerns the suburban villa on Borgo Pinti that he built in the 1470s for Bartolomeo Scala. As part of the villa decoration, Scala commissioned to Sangallo the illustration of his *One Hundred Apologues*.⁶⁰ This was a collection of his own fables modeled on the homologous Alberti's *Apologi Centum* that Scala dedicated to Lorenzo il Magnifico in 1481. These apologues, as well as their corresponding visual representations, show the primitivism and cynicism of Lucretius in their apparent celebratory function.⁶¹ Centered on Scala's knowledge of ancient texts and his own writings, they symbolize the nobility of learning as substitute for aristocratic lineage.

⁵⁸ Ibid., 87.

⁵⁹ Ibid., 90-99.

⁶⁰ On Scala's apologues, see Marsh, *Renaissance Fables*; Marsh, "Alberti, Scala and Ficino," 105-18, and relative bibliography.

⁶¹ The first who identified the panels with Scala's apologues is Parronchi (1964, 108-36). See Linda Pellecchia, "The Patron's Role in the Production of Architecture: Bartolomeo Scala and the Scala Palace," *Renaissance Quarterly* 42 (1989): 258-91; Alison Brown, "The House of Culture of Bartolomeo

Probably with this magnificent decoration in mind, Giuliano Gondi asked Sangallo to use apologues also in the courtyard of his family palace, which Sangallo began in 1489. As a response, Sangallo adorned the courtyard with a majestic staircase in which each step-end was tied to a specific fable from ancient fabular traditions. Gondi was a Florentine merchant who was passionate about Greek texts and fables: in his family palace these were turned into witty devices to transmit his philosophy of life to generations to come. Thanks to these understated architectural designs, Gondi could exhibit his interest in books and manuscripts and gracefully underscore his cultural knowledge and social status.⁶²

Intriguingly, Sangallo's staircase illustrates fables that are found in Del Tупpo and Accio Zucco's editions of Aesop owned by Leonardo, and in other collections of fables accessible to him—such as the *Medici Aesop* and the Arabic beast tale *Kalila wa-Dimna*. In Gondi's staircase, Eastern and Western fabular traditions are combined and reworked in a way that presupposes a syncretistic approach that is characteristic of both Sangallo and Leonardo. Furthermore,

Scala, Chancellor of Florence,” in *Studi e memorie per Lovanio Rossi*, Curzio Bastianoni, ed., (Florence: Polistampa, 2011), 219-237. According to Brown, Scala was probably inspired to decorate his house with apologues because he saw the Count Vitalino Borromeo's “sala di Esopo” in his Milanese palace. This sala was executed by Michelino da Besozzo, who also illustrated a codex of Aesop's fables, in 1445. One particularly interesting relief in Scala's palace is based on the apologue “Negligence” in reference to Scala's rise from obscurity to fame. It shows a temple front that sports a coat of arms with a ladder at its center to signify his name: *scala*. Cf. Linda Pellecchia, “From Aesop's Fables to the *Kalila Wa-Dimna*: Giuliano da Sangallo's Staircase in the Gondi Palace in Florence,” *I Tatti Studies in the Italian Renaissance* 14.15 (2011-12): 137-207, 178-79.

⁶² Pellecchia, “From Aesop's Fables to the *Kalila Wa-Dimna*,” 141, 146-47; Linda Pellecchia, “Stepping up. Observations on the Renaissance staircase in Florence,” *Opus Incertum* 11 (2008): 42-49; Linda Pellecchia, “Untimely Death, Unwilling Heirs: The Early History of Giuliano da Sangallo's Unfinished Palace for Giuliano Gondi,” *Mitteilungen des Kunsthistorischen Institutes in Florenz* 47 (2003): 77-117.

Sangallo uses a minimalist mode in his sculpted fables that perfectly reenacts the structure of Leonardo's fables and emblems.

There are fourteen step-ends in the Gondi's staircase. Only six of the step-ends relate to fables, five refer to ancient sculpture, and three still lack their immediate source.⁶³ The three step-ends with no source contain some interesting information. The fifth step-end from the bottom (step no. 5) shows a bird landing on a flowering plant that faces a headless lizard (Figure 3-6). Climbing up close to the staircase's top, we have two animals resembling otters attacking a fish-dolphin (step no. 12). Right after that, a bird roosts on a tree and peeks at a grasshopper, while a snail looks at them (step no. 13) (Figure 3-7). As Linda Pellecchia noted, some of these pictures are reassembled and featured on the right baluster of the Gondi fireplace, where the bird on the flowering plant peeks at a grasshopper, while the snail climbs a plant. Then, another lizard is slithering below a bird in the act of cleaning its feathers.⁶⁴

Few subtle ties connect Sangallo's source-lacking steps with Leonardo's word-and-image narratives. Interestingly, Leonardo depicts a lizard in just one occasion: an allegorical drawing preserved at the Metropolitan Museum of Art (Figure 3-8). Enclosed in a *tondo* adorned with a beautiful landscape, the lizard bites a snake to protect the man sleeping beside a tree. Leonardo comments:

⁶³ Before Pellecchia's study the only reference to the iconography of the staircase was by Pope-Hennessy, who noted its resemblance to fables of Aesop, Phaedrus, and Avianus. Cf. Pellecchia, "From Aesop's Fables to the Kalila Wa-Dimna," 148; John Pope-Hennessy, *Catalogue of Italian Sculpture in the Victoria and Albert Museum*, vol. 1 (London: Victoria and Albert Museum, 1964) 187.

⁶⁴ Pellecchia, "From Aesop's Fables to the Kalila Wa-Dimna," 149.

Il ramarro. Fedele all'omo vede<n>do quello adorme<n>/tato co<n>batte cholla bisscia non offenda lo adorme<n>tato.⁶⁵

Curiously, no direct source for this imagery is documented. Although, if we examine Leonardo's bestiary it is not hard to find plausible models. The lizard appears on Leonardo's bestiary entry 87. Here it is called *lucerta*, which is synonymous of *ramarro*:⁶⁶

Lucerte.

Questa, quando combatte colle serpi, mangia la cicerbita e son libere (*best.* 87.)⁶⁷

In the same bestiary, we find the virtue of fidelity exactly depicted as in the emblem of the lizard, but in reference to cranes:

Fedeltà over lialtà.

Le gru sono tanto fedeli e leali al loro re che la notte, quando lui dorme, alcune vanno d'intorno al prato per guardare da lunga, altre ne stanno da presso, e tengano uno sasso ciascuna in pié, a ciò che se 'l sonno le vincessi, essa pietra caderebbe e farebbe tal romore che si ridesterebbono. E altre vi sono che 'nsieme intorno a' re dormono, e ciò fanno ogni notte, scambiandosi a ciò ch'il loro re non venghi a mancare (*best.* 18.)⁶⁸

⁶⁵ Leonardo da Vinci, MET 17.142.2. "The lizard faithful to man, seeing him asleep, fights with the snake, and as he [the lizard] sees that [he] cannot conquer her [the snake], he [the lizard] runs over the face of the man to wake him so that the snake may not harm the sleeping man." Transl. Bambach, in *Leonardo da Vinci 1452-1519: The Design of the World*, Marani and Fiorio, eds., 554.

⁶⁶ Precisely, *ramarro* is the common name for two particular species of lizards: *lacerta bilineata* (Western green lizard) and *lacerta viridis* (green lizard).

⁶⁷ Leonardo da Vinci, Ms. H, fol. 27r. "Lizards. / When this one combats with serpents, it eats of the sow-thistle, and so becomes free." Transl. Venerella, *Manuscript H*, 33. Cf. Leonardo da Vinci, *Scritti*, Vecce, ed., 87.

⁶⁸ Leonardo da Vinci, Ms. H, fol. 9. "Fidelity, or loyalty. / Cranes are so faithful and loyal to their king that, during the night, when he is sleeping, some of them will go about in the field, to keep watch from afar. Others remain close to him, each one holding a stone in one foot, so that if sleep were to prevail, this stone would fall and make such a noise that they would awaken again. And they do this each night, taking turns, in order that their king will not be lost to them." Transl. Venerella, *Manuscript H*, 12. Cf. Vecce, ed., *Scritti*, 75.

By the assimilation of these two fragments, it is easy to deduce the emblem of the lizard.

What is fascinating about the passage on the crane, is that Leonardo re-elaborates it on fol. 118v from Ms. H and adds a visual note:

Lealtà. Le gru a ciò che lor re non perisca per cattiva guardia la notte li stanno d'intorno con pietre in piè. Amor, timor, e reverenzia: questo scrivi in tre sassi de' gru.⁶⁹

The note reminds Leonardo to write three words ('love,' 'fear,' 'reverence') in the cranes' stone, and thus testifies the artist's aim to turn the allegorical text into a possibly sculpted image. In Cinquecento emblems and bestiaries, lizards and crocodiles are often assimilated and associated with these three qualities, and with the virtue of fidelity.⁷⁰ This is probably the final instance before Leonardo's crane is transformed into a lizard. The Metropolitan *tondo*, with the emblem of the lizard, is now ready to become a medal and adorn a theatrical costume, as argued by Carmen Bambach.⁷¹

Additionally, we know that Leonardo's model for his bestiary entries on the crane and the lizard are, respectively, the *Fior di Virtù* and the *Historia Naturale* preserved in his personal library. *Fior di Virtù*, which records the description of fidelity in reference to cranes, is

⁶⁹ Leonardo da Vinci, Ms. H, fol. 118v. "Loyalty. Cranes stand around their king with stones in their feet in order that he not perish on account of a poor guard." Transl. Venerella, *Manuscript H*, 124. Cf. Leonardo da Vinci, *Scritti*, Vecce, ed., 90.

⁷⁰ Cf. Alciato's emblem 36, "Niliacus qualis serpens fugientibu." *Emblematica Online*, accessed February 2, 2018, <http://emblematica.grainger.illinois.edu/detail/emblem/FBEa036>; *Bestiaria Latina*, 86, "Virtus lorica fidelis." Ibid., <http://emblematica.library.illinois.edu/detail/emblem/E020641>.

⁷¹ Cf. Carmen Bambach, cat. V.13, in *Leonardo da Vinci 1452-1519: The Design of the World*, Marani and Fiorio, eds. (Milan: Skira, 2015), 246-47, 554.

apparently not related to any of Gondi's step-ends.⁷² Conversely, Pliny is arguably the direct source of both Leonardo's and Sangallo's lizards. Leonardo's entry on the lizard is modeled on chapter 27 from book 8, which briefly mentions lizards winning over snakes thanks to a peculiar herb:

E una herba eccellente a morsi delle serpi con la quale le lucertole si ricreano quando combattono con quelle.⁷³

In book 13, chapter 4, Pliny mentions the lizard again to discuss an example of praiseworthy ancient marble artists. One of these incredible sculptors is Canaco, who sculpted a relief of the noble Batraco and Lacedemone in the form of a lizard and a frog—because their names in Greek signified *lucertola* (lizard) and *ranocchio* (frog)—to adorn the columns of their magnificent temple.⁷⁴

⁷² Here is the *Fior di Virtù*'s original text on which Leonardo's entries are modeled: "De la Lealtà. Capitulo xxii. / Lialtà secondo Terentio si è havere perfeta e pura fede e non mostrar un per un'altra. / Exempio. / E puose appropriare e asemiare la virtù de lialtà a le Grue che hano un suo Re alo quale tute serve piu lialmente che non fa niuno altro animale per che la note quando le dorme: si mete lo suo Re de mezzo e tute le altre li sta d'intorno: e mete sempre doe o tre de le altre dintorno a far la guardia: e a ciò che la non fa adormentaseno: le tiene un pie levado in aere e l'altro in terra: e in quello che le tiene levanto tendon sempre una pietra: per che se lo sono le stracase la piera li cagerave del pie: et le se ve gnerave a resentire. Et questo sale per la grande lialtà: che le se porta insieme: e per che lo suo Re non li venisse a mencare per mala guardia: ni le altre che dorme." *Fior di Virtù*, fol. 42r. Cf. Leonardo da Vinci, *Scritti*, Vecce, ed., 90.

⁷³ Pliny, *Historia naturale*, 8, 27, 76-90. Pietro Marani indicated the source of Leonardo's *lucerta* in chapter 28 of the same book referring to this passage. Cf. Richter 1883, cat. 1261a, 333 (ed. 1970, II, 275); Solmi 1908, 245; De Toni 1922, 84 (from Latin edition of Pliny); Marinoni 1952, 111; MacCurdy 1956 (1977, II, 439); Marinoni 1974, 113; Pedretti 1977, II, 265. Cf. Marani, "Le fonti del 'Bestiario' di Leonardo," in Leonardo da Vinci, *I manoscritti dell'Institut de France. Il manoscritto H*, Marinoni, ed., 151.

⁷⁴ Pliny, *Historia naturale*, 13, 4, 76-90.

We have no document testifying that Sangallo saw Leonardo's projects or *viceversa*; neither we have proof that Sangallo had direct access to the representations of lizards above mentioned. Therefore, the source attribution of the sculpted lizards from the Gondi Palace remains unknown. However, the existence and development of these representations suggest a possible significance of the sculpted lizards in relation to Leonardo's medal: the celebration of the bond between Giuliano Gondi (the loyal lizard) and the Neapolitan King (the prosperous plant).

Two more observations can be made on the recurrent motifs of lizards, birds, snails, and grasshoppers in the Gondi palace in relation to Leonardo's visual and written narratives. In shaping their fables and emblems, Sangallo and Leonardo remarkably used the same technique of repetition with variation aimed at the gradual characterization of subjects and scenes. In fact, Sangallo portrayed the lizard initially facing the bird and then slithering below it. Similarly, in one scene the snail looks at the bird and the grasshopper, and in the latter scene it leaves unnoticed to climb a nearby tree.

Leonardo's spider behaves in a comparable manner in both fable and respective emblem: first it approaches the keyhole, and then it encounters the killer key (*fab.* 52). Leonardo also applies the same procedure in his bestiary. Not only does he propose more than one entry on the same subject—such as with the previously analyzed falcon and crane—but he also recombines

the subjects across different entries. Exemplary of this approach are his bestiary sequences on birds and reptiles—in which the emblem of the lizard features in its seminal form.⁷⁵

In addition, Leonardo and Sangallo appear to focus on the same cluster of animals: reptiles and birds, small insects, crustaceans and mollusks.⁷⁶ As Pellecchia claimed, these are unusual subjects for ceremonial uses:

That crows, crabs, and crickets adorn the staircase appears incongruous, even indecorous, against the overwhelmingly heraldic tone of the courtyard decoration. Given their oddity, it is not surprising that the step-ends have been completely neglected in the scholarly literature on the palace.⁷⁷

This assertion resonates perfectly with the present analysis, which attempts to address forgotten details and subjects permeating Leonardo's manuscripts and personal books. These find a striking parallel in Sangallo's apparently merely ornamental architecture.

The five step-ends referring to ancient sculpture, according to Pellecchia, function exactly as mere staircase embellishments. Among them, two in particular sparks our interest. They

⁷⁵ Birds are the protagonists of 28 bestiary entries: 1 (*calandrino*); 2 (*nibbio*); 3 (*gallo*); 4 (*corbo*); 7 (*upica*); 9 (*colombi*); 11 (*aquila*); 17 (*pernice*); 18 (*gru*); 23 (*falcone*); 24 (*pagone*); 25 (*finice*); 26 (*rondone*); 30 (*falcone*); 32 (*avvolto*); 33 (*tortora*); 36 (*aquila*); 37 (*lumerpa*); 38 (*pellicano*); 42 (*struzzo*); 43 (*cigno*); 44 (*cicogna*); 47 (*pernice*); 48 (*rondine*); 61 (*duco, civetta*); 88 (*rondine*); 94 (*corvo*); 97 (*calderigio*). Reptiles are recorded on 25 entries: 8 (*rospo*); 10 (*basalischio*); 39 (*salamandra*); 40 (*cameleon*); 50 (*bavalischio*); 51 (*aspido*); 52 (*drago*); 53 (*vipera*); 55 (*coccodrillo*); 56 (*botta*); 63 (*dragone*); 64 (*serpenti*); 65 (*boie*); 74 (*catoblepa*); 75 (*basilisco*); 77 (*ceraste*); 78 (*amphesibene*); 79 (*iaculo*); 80 (*aspido*); 81 (*icneumone*); 82 (*coccodrillo*); 85 (*ibis*); 87 (*lucerte*); 91 (*serpe*); 93 (*chemeleonte*); 98 (*ramarro*); 100 (*lamia, bavalischio*). We should note that often entries on bird are followed by entries on reptiles, and that both birds and reptiles are featured also in entries with other animals as protagonists. Additionally, these animals are grouped into multiple series according to their characters. Cf. Leonardo da Vinci, *Scritti*, Vecce, ed., 73-89.

⁷⁶ We focused on insects in Chapter Two. We will illustrate cases studies on small crustaceans and mollusks later in this chapter.

⁷⁷ Pellecchia, "From Aesop's Fables to the *Kalila Wa Dimna*," 141.

represent flowers standing and bowing down which evokes images of bent plants found in Del Tuppo's *Favole*. For their particular chiasmic format, the flowers seem sculpted versions of Leonardo's emblem of the lily. This curious link is strengthened by another reference to the same emblem in the staircase and ceiling's *peducci*, in which ribbons with the letters SIN adorn a flaming cornucopia, Gondi's personal emblem. The family historians Abate Carlo Antonio Gondi and Jean de Corbinelli consider this letter combination as the abbreviation of the *motto* "Non Sine Labore" ('not without hard work')—drawn from Horace's *Satira* 1, 9, 59: "Nil Sine Magno Labore." According to them, King Ferdinand I or his son gave this *motto* to Gondi to thank him for his support in times of difficulty for the Reign of Naples (Figures 3-9, and 3-10).⁷⁸

It is curious that SIN would stand for "Non Sine Labore," for which the acronym NSL might seem more suitable, as noted by Pellecchia. What is even more striking is that Leonardo re-uses a similarly distorted *motto* in one version of his emblem of the lily, which is labeled: "Sine Labore." I employ these apparently ephemeral connections to suggest that the step-ends lacking a source—not even directly linked to fables—somehow draw Leonardo and Sangallo together. We can now move to Sangallo's step-ends that are more relevant to our study: those depicting actual fables.

⁷⁸ Ibid., 138.

Among Sangallo's step-ends illustrating fables, four are inspired by the *Medici Aesop*, a beautifully illuminated Greek manuscript.⁷⁹ The fourth step is modeled after the fable of the eagle and the beetle. The story tells that the beetle pleads the eagle not to eat the hare; the eagle does not listen to him and, in the end, the beetle wins over the eagle by repeatedly destroying its eggs. Sangallo modifies the manuscript illustration perhaps to constrain it into the compact limits of the frame and, simultaneously, he gives birth to an image of immediate vitality. In the sculpted fable, the eagle overpowers the beetle: the predator is turned into the prey. Leonardo applies this very same mechanism in his fable of the thrushes and the owl, in which Aesop's persecuted thrushes become Leonardo's persecutors (*fab.* 35.). In both cases, viewers are challenged to identify the contrast between the source and its artistic tweak and, simultaneously, between the text and image.⁸⁰

From the *Medici Aesop* are also drawn the sculpted images of the fable of the boar and the mouse (step no. 6), of the weasel and the rooster (8), and of crow and the snake (10)—similarly unloaded from redundant details. The tenth step is particularly interesting for our discourse. Here, Sangallo decides to condense two scenes of the Aesopic fable within the same frame. The fable tells of the crow wishing to eat the snake, which eats her in turn. Sangallo sculpts a plant to partially split the scenes; then he portrays the bird attacking the snake, and

⁷⁹ The *Medici Aesop* is the manuscript 50 preserved in the New York Public Library. It is a luxury volume based on Accurzio's printed edition that was executed almost certainly for the Medici in 1480s, about a decade before Sangallo's step-ends were designed. *Ibid.*, 154-56.

⁸⁰ *Ibid.*

the dying bird with the mouth open to lament her misfortune. The scheme of this sculpted relief, following the cause-effect model, is perfectly reflected in Leonardo's fables and emblems of the lily and the spider.⁸¹

The last Aesopic fable depicted can either be that of the nightingale and the sparrow-hawk from the *Medici Aesop* or, more likely, that of the doves and sparrow-hawk (step no. 11). This version appeared in Accio Zucco and Del Tупpo's editions—the very same books owned by Leonardo—or the Latin edition of *Aesopus moralisatus*, published by Giovanni and Alberto Alvise in 1479.⁸²

The last step (no. 14) illustrates a fable derived from a different tradition. The sculpture shows a crane holding a snake in its mouth, while a crab is gripping the crane's neck (Figure 3-11). Its source is the *Kalila wa-Dimna*, an Arabic translation of ancient Indian fables known as *Panchantra*, where these animals uniquely feature together.⁸³ Leonardo also writes a fable on a

⁸¹ According to Pellecchia, the inclusion of two scenes within the same relief served to make the fable distinguishable from the most common motif of the eagle and the serpent. *Ibid.*, 159.

⁸² In order to make the doves identifiable, Sangallo adds in the corner sheaves of grain that look like a millet. Varro, in fact, identified millet as doves' favorite food. Varro, *De re rustica*, 3.2.7. *Ibid.*, 164-167. Leonardo uses the millet in his fable 11: "Favola. / La formica, trovato un grano di miglio, il grano sentendosi preso da quella gridò: 'Se mi fai tanto piacere di lasciarmi fruire il mio desiderio del nascere, io ti render cento me medesimi.' E così fu fatto." Leonardo da Vinci, Cod. Atl., fol. 188v; Marinoni, ed., *Scritti*, n. 13. "When an ant found a grain of millet and picked it up, it cried out: 'If you do me a great favor and let me achieve my desire to sprout, I shall give you a hundred of me.' And that's what happened." Transl. Marsh, *Renaissance Fables*, 283. The inclusion of grain in both Leonardo and Sangallo's fables allude to the virtue of prudence that is only reflected in Del Tупpo's translation. This inclines us toward Del Tупpo as the primary source for both the artists.

⁸³ Pellecchia, "From Aesop to the *Kalila wa-Dimna*," 171-75.

crab, which is apparently neither related to the Arabic nor to the Aesopic tradition.⁸⁴ However, one unique feature of *Kalila wa-Dimna* is the exceptional interrelation of diverging tales that reunite and then splits again in the course of a single overarching story.⁸⁵

As hitherto demonstrated, the interrelation of subjects, themes and fables across a single textual and visual narration is one of Leonardo's major contributions to both fable and emblem traditions. Therefore, this breach on cross-cultural fabular pollination in the Renaissance offers a fertile terrain for further analysis of unresolved issues of source attribution concerning Leonardo's fables and emblems.

In addition, Sangallo's creation of sculptural reliefs illustrating fables for both the Scala and Gondi palaces shows the frequent sculptural destination of fables in a concise emblematic form. This form follows a chiastic scheme to show the causes and effects of the depicted situation in the constrained physical space of the step-end's triangular frame. Not only Sangallo's chiastic scheme but also its modeling around triangular shapes is found in Leonardo—let us think about spiders and triangles recorded on fol. 820 from the Codex Atlanticus.⁸⁶ Given the multiple similarities between Leonardo's and Sangallo's works on fables, Frommel's hypothesis on the contact between the two artists appears persuasive.

⁸⁴ For a discussion on the fable of the crab, see the following section (3.2.1) in this chapter.

⁸⁵ Ibid., 172.

⁸⁶ Cf. Chapter Two, paragraph 2.1.2. *Spiders*, in this manuscript.

Ultimately, the Gondi staircase represents an exceptional case of cultural conglomerate that moves away from the original model toward a synthetic form to convey the artist's wit and creativity. Sangallo and Leonardo certainly shared a common approach in face of their models: they integrated their sources with observational skills and other visual and cultural traditions. In this way, they directly referred to their models by somehow concealing them behind their *ingenium*.

3.2. Phenomena, Models, Mechanical Metaphors

3.2.1. *Oysters and Crabs: Cause and Effect*

In early modern workshops, it was a common trend to combine scientific projects with artistic interpretation, and to use the visual arts for the exact depiction of a process, as documented in Taccola and Leonardo's drawings of machines.⁸⁷ In addition, the creation of a synthetic image reflecting the causes and consequences of a situation could bring to the translation of fables into emblems, often with a sculptural destination. This is the case of Sangallo's sculpted fables for the Gondi and Scala palaces, and of the anonymous sculpted emblems of the monkey and the bird⁸⁸ and of the falcon,⁸⁹ both modeled on Leonardo's fables.⁹⁰ Scholarship focusing on sculptural representation of fables in the Renaissance might feasibly enlighten the practical destination of Leonardo's method of translating fables into emblems. However, this method had certainly not only a political significance related to artistic commissions. Leonardo devoted himself to fables and emblems also because they allowed him to mingle his technical and artistic skills, empirical observation, and experience, in order to simultaneously reach and communicate his knowledge

⁸⁷ Cf. Paragraph 3.1.2. *Taccola's Wells*, in this chapter.

⁸⁸ The sculpted emblematic representation of the fable of the monkey and the bird is discussed in Chapter One, paragraph 1.2.3. *Leonardo's Aesopic Monkey and Nut's Metamorphosis*.

⁸⁹ With the sculpted emblem of the falcon, I mean the low relief reproducing Leonardo's rebus "falcon tempo," which is mentioned in my analysis of Late Cinquecento *imprese* in relation to Leonardo's fables. Cf. Chapter Two, paragraph 2.3.1. *Butterflies*.

⁹⁰ Cf. Paragraph 3.1.3. *Sine lassitudine: The Lily of Sangallo*, in this chapter.

of Nature. In this respect, his process follows an identifiable pattern, as is clarified in the examination of the fables of the crab and the oyster.

Folio 663r from the Codex Atlanticus strikingly unites notes belonging to varied fields of analysis with ostensibly no connection with one another. Observational and geometrical drawings of natural elements and a text on vision run beside a paragraph on gravity with illustrated examples from experience. Then, a text by another hand mentioning Salai is tailed by one of Leonardo's to-do lists. Overlooked by critics for its fragmentary nature, this folio, dated 1505-8, seems to establish a unifying thread of the mechanics behind Leonardo's creation of fables and emblems.⁹¹

If we hold the folio vertically, we observe a beautiful drawing of a flower similar to a lily, laid out in the manner of *herbaria* in the top half of the folio, at center. The flower, considered not by Leonardo's hand, recalls in its drawing style the delicate sketch of a lily pricked for transfer preserved at the Royal Collection of Windsor (RL 12,418).⁹² On the bottom, if we turn the page 90 degrees right, we read a text on optics entitled "Pruova come li occhiale aiuta la vista" that describes how glasses impact vision. On the *verso*, to the left, Leonardo outlines a series of observations on gravity describing the behavior of fire, water, and air when they interact with one another. The scientific text is accompanied by captioned drawings.

⁹¹ Cf. Carlo Pedretti, "Spigolature nel Codice Atlantico: I," *Bibliothèque d'Humanisme et Renaissance* 22.3 (1960): 526-548, 545.

⁹² Ibid.

The first two drawings show a couple of facing triangles linked by an angle: the first has its base parallel to the top side of the sheet; the base of the latter is parallel to the lower sheet's side. In the first sketch, labeled *Foco nell'aria*, Leonardo highlights the triangle parallel to the lower sheet's side, representing a fire underlying the water. In the second, labeled *Acqua nell'aria*, he highlights the opposite triangle: the air floating on the water. The latter, *Aria sott'acqua*, shows the same opposite triangle (air) circumscribed in a bigger triangle (water). The dimensions of the air-triangle gradually decrease and, compressed by water, its surface is concentrated on the top. The water-triangle compresses the air-triangle and sends it away (*prieme e scaccia*) up until it destroys it (*prieme e ruina*):

L'acqua circunscrivente l'aria che per accidente in lei s'include, o immediate acquista peso, onde in verso il centro d'essa aria *prieme e ruina*, quella *sospingendo e cacciando* successivamente del suo sito, o per essere di se medesima evacuata e ripiena da corpo di più levità di lei, immediate acquista peso; e perché la resistenza dell'aria rinchiusa è minor che la potenza dell'acqua che la *prieme*, è necessitata a cedere e dar loco alla *ruina* de l'acqua che dinto<r>no a lei s'appoggia, onde in tal sito da essa acqua è cacciata.

L'aria per sua natura non fugge di sotto l'acqua, ma l'acqua che intorn'a quella s'appoggia, fori di sé la *prieme e scaccia*.

Adunque l'uno elemento non fugge per sé dall'altro elemento, ma è cacciato da quello.⁹³

The scientific notations and illustrations featured on this folio directly refer to subjects, themes, structures, and vocabulary that we found in Leonardo's fables analyzed in the previous chapters. For instance, we clearly distinguish the unceasing pursuit of fire, water, and air at the core of fables 1, 4, 34, as well as the interaction of small forces and natural powers in the fables of the lily and the current (*fab.* 41), and of the spider (12, 17, 45, 52). Emblematic verbs such as *scacciando*;

⁹³ Leonardo da Vinci, Cod. Atl., 663v.

cacciata; *cacciato* that are found in the scientific text are also in fable 5 (*cacciare*), fable 26 (*cacciare*), and fable 34 (*cacciando*, *cacciato*). Words referring to movement across locations recurrent in the scientific text (*sospingendo*, *evacuata*, *sito*, *loco*), are also frequent in Leonardo's fables: *loco* (*fab.* 15); *lochi* (26); *fu po' costretto a mutar sito* (47). Then we have references to elevation, such as *levità* in the scientific text and *montare*, *sittigliezza* and *sottile* in fable 1; *sottilità* in fable 7; and then *elevarsi*, *dirizzavano* (*fab.* 34); *dirizzò*, *dirizzato* (40); *dirizzarsi al cielo*, *rizzò*, and *crescendo*, *accrescimento*, *aprimento* (19). Finally, we have verbs belonging to the semantic sphere of 'escape': *fugge*, in the scientific text and *fuga* (*fab.* 1); *fuggire* (15); *fuggendosele* (16); *fuggitiva* (19).⁹⁴

On the left hand side of the folio, among other studies on gravity, there are some interesting notes and sketches. One of them is clearly a *fleur-de-lys*, which perhaps turns the botanical study on the recto into a sketch for a decorative sign—in the manner of the *Sala delle Asse*'s fresco

⁹⁴ Additional relevant recurrent vocabulary that relate to the scientific observations on gravity describing the behavior of fire, water and air is the following: *include-prieme-ruina* ("ruina," *fab.* 46; "rovinò," *fab.* 26; "dissolve," *fab.* 14; "disfatte-disfatta," "discendere," *fab.* 15; "mancare," *fab.* 20; "declinare," *fab.* 29; "iscorticasse-consumata," *fab.* 22; "consumata," *fab.* 37; "consumatrice," *fab.* 40; "consumorono," *fab.* 25; "disfazione," *fab.* 28; "storpiato," *fab.* 50; "storpiata-pelata," *fab.* 23; "stracciati-storpiati," *fab.* 24; "piegato e rotto," *fab.* 32; "lacerate diramato e rotto," *fab.* 33; "diradicato e rotto," *fab.* 30; "pestava," *fab.* 38; "battuta," *fab.* 39; "lapidava," *fab.* 31); *accidente* ("accidentale," *fab.* 6); *peso* ("disconcio peso," *fab.* 19; "peso di detti frutti," *fab.* 30). On Leonardo's technical-scientific lexicon, see Paola Manni, *Percorsi nella lingua di Leonardo: grafie, forme, parole, XLVIII Lettura Vinciana* (Florence: Giunti Barbèra, 2008); Paola Manni, "Riconsiderando la lingua di Leonardo. Nuove indagini e prospettive di studio," *Studi linguistici italiani* 34.1 (2008): 25-28; Paola Manni and Marco Biffi, eds., *Glossario Leonardiano. Nomenclatura delle macchine nei codici di Madrid e Atlantico* (Florence, Olschki: 2011). Cf. also Maria Luisa Altieri Biagi, "Sulla lingua di Leonardo," in *Fra lingua scientifica e lingua letteraria* (Pisa: Istituti Editoriali e Poligrafici Internazionali, 1998): 74-95.

celebrating the marriage of Ludovico il Moro and Beatrice d'Este.⁹⁵ This symbol frequently recurs in Leonardo's emblems. Among them, we have the widely discussed RL 12,700r with the visual narratives on the lily and two slightly later folios, RL 12,282r and RL 12,701, which show the emblem of a compass surmounted by a star made of the same *fleurs-de-lys*.⁹⁶

Close to the lily, there are few texts that are difficult to interpret and written by another hand: a list detailing a family's financial affairs and an ironic invocation of peace intended for Leonardo's favorite pupil Salai:

pese 8
vino 8
cruca 302
pane 4

Salai, io uore' posare, cioè no guerre, no più guerra, che io m'arendo.⁹⁷

⁹⁵ Cf. Martin Kemp, *Leonardo da Vinci: The Marvellous Work of Nature and Man*, 167-76; Fiorio, "Dalla pratica alla teoria: Leonardo e la natura," in *Leonardo da Vinci: Metodi e tecniche per la conoscenza*, Marani and Maffei, eds., 169-76.

⁹⁶ According to Ladislao Reti, Leonardo sketched these emblems under commission of Cesare Borgia. If that is the case, the *fleur-de-lys* could signify Borgia's alliance and devotion to the French crown. Cf. Ladislao Reti, "Non si volta chi a stella è fisso: le imprese di Leonardo da Vinci," *Bibliothèque d'Humanisme et Renaissance* 21, no. 1 (1959): 7-48.

⁹⁷ Leonardo da Vinci, Cod. Atl., 663v. The transcription of the list, which is missing in Augusto Marinoni's critical edition (1975-80), is offered in Giovanni Galbiati's *Dizionario leonardesco. Repertorio generale delle voci e cose contenute nel Codice Atlantico...* (Milan, 1939). The sentence on Salai is transcribed by Giuseppina Fumagalli (*Eros*, 69) as "Salai no se poserà con non pingere, nè pingerà che <in> Roma sendo." Carlo Pedretti then re-discussed it in connection with the list and offered a very convincing modern interpretation: "Salai, io vorr' pasère (fare pace) ciè non guerre. Non più guerre che io m'arendo." See Carlo Pedretti, "Spigolature nel Codice Atlantico: I," 543-45; Leonardo da Vinci. *Il Codice Atlantico della Biblioteca Ambrosiana di Milano*, Marinoni, ed., 1388-1389. Here I used the modern transcription found in Vecce (*Leonardo*, 219).

Close to these notations, and readable by turning the paper of 180 degrees, there are two other memos—surely by Leonardo:

il manganese da vetro
il granchio di Francesco da Lusanna.⁹⁸

These two brief sentences are particularly striking here: the first mentions manganese, which is a variety of magnetite used to discolor glass and of the highest magnetic properties in nature, as recorded in Pliny; the second refers to a crab owned by a certain Francesco. They are materials that Leonardo would need for his studies: a magnet, to be used for his experiments on magnetism (and possibly for the aforementioned emblem of the compass?) and a crab that will be the protagonist of an exquisite life drawing and of one of his fables.

Let us now follow the development of one single thread—the note on the crab—in order to identify a recurrent pattern among the stratification of Leonardo's thoughts and notes. On folio Z2003v, dated 1480 and preserved at the Wallraf-Museum of Cologne, Leonardo draws a crab in two different positions with extraordinary accuracy (Figure 3-12). Carlo Pedretti noted that the protagonist of the Cologne sheet is a river crab that can be found in Vinci.⁹⁹ To realize a drawing so accurate in details, one might speculate that Leonardo had a dead crab at his disposal—probably the one preserved by his friend Francesco. To draw the first image, he positioned the crab with the paws wide so that he could analyze the animal in all its features.

⁹⁸ Ibid.

⁹⁹ Cf. Carlo Pedretti, *Leonardo. Il disegno* (Florence: Giunti, 2014), 23.

Then, he positioned the crab crouching in a more natural attitude to sketch a plausible and fresh image.

What actually testifies to Leonardo's direct observation of crabs on the riverbanks of Vinci is his fable 44, which is unquestionably modeled on a sharp natural picture:

El granchio stando sotto il sasso per pigliar e pesci che sotto a quello entravano, venne la piena con rovinoso precipitamento di sassi, e collo rotolarsi sfracelloron tal granchio.¹⁰⁰

The crab does not foresee the danger of the flood and dies because, such as the spider, chooses the wrong place to catch its prey. This crustacean is the protagonist of three fables from the Aesopic tradition. In fable 150, as soon as it leaves the sea to become an earthly animal, the fox eats it. Then, in fable 151 the crab admonishes its son not to walk backwards, of course without any success, because crabs walk backwards by nature. Finally, fable 290 portrays a crab that kills a snake because it misbehaves.¹⁰¹ Given that the only fable recorded in Leonardo's editions of Aesop is the second of the series (fable 151, which is part of the Lyon collection), none of them in particular resonate with Leonardo's version.

The Aesopic corpus gathers three unrealistic stories that are primarily concerned with the moral value of the fable—rather than on the credibility of the scene. Leonardo, on the contrary, in creating his own narrative, heavily relies on empirical observation and experience. The crab is

¹⁰⁰ Leonardo da Vinci, Cod. Ar., 42v; *Scritti letterari*, Marinoni, ed., n. 37. "The crab hid beneath a rock to catch the fish that entered there. But flood waters caused the rocks to collapse violently, and the crab was crushed between them." Transl. Marsh, *Renaissance Fables*, 331.

¹⁰¹ The crab also appears in many of Burchiello's sonnets that might have stimulated Leonardo's imagination. Cf. *I sonetti del Burchiello* Zaccarello, ed., XXV, v. 8, 25; XXVI, v. 9, 25; LXXXVIII, v. 6, 88; CVII, v. 15, 106; CLII, v. 11, 151; CLXIII, v. 11, 160.

depicted in its own setting—beneath the rocks—attempting to catch its real prey—a fish. Flood waters, not an improbable fox or snake, are the event that overcome it by causing the rocks to collapse and smash the crab, such as in a micro natural catastrophe. It seems that Leonardo primarily cared for the correct depiction of the phenomena.

Not only Leonardo focused on the description of natural phenomena, but he also tried to rationalize them on the fable's structural level. In fact, the narration follows precisely the cause-effect model: the crab hides beneath the rock to get the fish—cause (*a*)—and the flood waters get the rocks to smash the crab—effect (*b*).

If we do not have an emblem modeled on the subject of the crab, we do find the animal in a sheet of studies of allegorical figures and motives inspired by the antiquity from the Musée Bayonne-Bonnat (inv. Al600-NI1778). Here, we have the sketch of two standing *putti* carrying a giant crab. According to Pedretti, this might be a study for a little sculpture or a relief derived from the Cologne still life of the crab (Figure 3-13).¹⁰² Drawings of crabs intended for sculpted motives inspired by antiquity are also found in Sangallo's Senese sketchbook (fols. 43v and 38v). The extremely ornamental nature of Sangallo's sketches, however, has little in common with Leonardo's vividness of sign in both his life drawing and allegorical sketches of crabs. Traces of fables and emblems depicting a crab similar to Leonardo's are not easy to locate. It is enough to mention Scipione Bargagli's *Dell'imprese*, in which the image of the crab is used as exemplary of

¹⁰² Cf. Pedretti, *Leonardo. Il disegno*, 23.

an emblem that takes *motto* and *figura* from different sources.¹⁰³ The *motto* of Bargagli's emblem "Dal variato aspetto," is in fact drawn from a Petrarchan sonnet; while the image depicts what is believed to be the crab's nature. Here, the crab's well-known dependence on and subjugation to the moon becomes a metaphor of the bond between lovers with their beloved.¹⁰⁴

In Leonardo's bestiary, the crab appears exactly under the moon, together with another sea animal, the oyster, to signify betrayal:

Ostriga.

Pel tradimento.

Questa, quando la luna è piena, s'apre tutta, e quando il granchio la vede, dentro le getta qualche sasso o festuca, e questa non si pò riserrare, onde è cibo d'esso granchio.

Così fa chi apre bocca a dire il suo segreto, che si fa preda dello indiscreto ulditore (*best.* 49.)¹⁰⁵

In the fable of the crab, it seems that Leonardo felt free from the imposition of codified symbols on his natural description; in the context of an allegorical bestiary the dynamics of interaction of crabs and oysters are moralized accordingly to the tradition. However, the moral is based, even in this case, on a realistic natural picture of a crab in its natural environment.¹⁰⁶

¹⁰³ A crab appears in the emblem of Augustus Caesar, entitled *FESTINA LENTE*, which is recorded in Giovio, *Dell'imprese* (1562). 11.

¹⁰⁴ I include, for reference, Bargagli's description of the emblem of the crab and the moon: "Fu portata tale impresa da Girolamo Corti, formata dal nostro domestico: il quale forse vi fu alquanto svegliato da quello, ch'il Petrarca disse de gli occhi della sua Laura. Che dì, e notte si riversa, / Il gran disio per disfogare il petto, / Che forma tien del variato aspetto. / Ch'a similitudine della soggezzione, o dipendenza notissima del Granchio colla Luna, si voleva significare l'una, e l'altra; che 'l portator d'essa teneva sempre verso la persona amata." Bargagli, *Dell'imprese*, 185.

¹⁰⁵ Leonardo da Vinci, Ms. H, 14v; *Scritti letterari*, Marinoni, ed., n. 49; *Scritti*, Vecce, ed., 79-80.

¹⁰⁶ Such as many of Leonardo's bestiary entries, this chapter appears on Manuscript H, on the very first page. The relationship between crabs and a variety of shells, including oysters, is widely discussed in

The importance of empirical data is even more evident when the oyster becomes the protagonist of Leonardo's own fable:

Favola.

Sendo l'ostriga insieme colli al<tri> pesci in casa del pescatore scaricata vicino al mare, priega il ratto che al mare la conduca. Il ratto, fatto disegno di mangiarla la fa aprire e, mordendola, questa li serra la testa e si lo ferma. Viene la gatta e l'uccide (*fab.* 42.)¹⁰⁷

The archetype of Leonardo's text is a Greek epigram by Antifilo di Bisanzio (I d.C.). This is recorded in Del Tuppo's *Favole*, translated for the first time in Latin as a postscript to the fable

De musca et calvo.¹⁰⁸

Ostrea servabat clausa piscator in archa
 quae mandidus paulo traxerat ante mari.
 Mus subit ostriumque videns is pandere callum
 mordet at unde petit, fit cibus ille, cibum.
 Namque caput strictis abscisum faucibus intus
 mansit et exterius caetera muris errant.
 Cumque comesturus piscator poneret igni
 ostrea clausa patet, miraque praeda caput.
 Contigit hoc alios cuicumque offendere mens est,
 Saepius offense deperit ille sua.¹⁰⁹

Del Tuppo's translation slightly differs from the original because it emphasizes the tragic death of the mouse and introduces the presence of a fisherman. It is exactly thanks to the detail of the

Pliny's *Naturalis Historia*, and this might have contributed to stimulate Leonardo's interest in this literary image. Cf. Plin Sen., *Nat. Hist.*, 876.

¹⁰⁷ Leonardo da Vinci, Ms. H, 51v; *Scritti letterari*, Marinoni, ed., n. 35. "Together with other fish, an oyster was caught and dumped in a fisherman's house by the sea. It begged a rat to carry it back to the sea. Intending to eat the oyster, the rat opened it, but as it started to bite, the oyster clamped shut and trapped it." Transl. Marsh, *Renaissance Studies*, 311. Cf. Leonardo da Vinci, *Scritti*, Vecce, ed., 66-67.

¹⁰⁸ Cf. Francesca Piccioni, "Il topo e l'ostrica: la lunga fortuna di un motivo favolistico," *I Quaderni del Ramo d'Oro* 8 (2016): 66-80.

¹⁰⁹ Del Tuppo, *Favole*, n. 34.

fisherman that we know that Leonardo definitely looked at Del Tuppo's edition. Rather, we should admit that Leonardo knew particularly well Del Tuppo's book, also in its Latin sections, despite his scarce knowledge of classical languages.

As in the case of the fable of the crab, Leonardo tweaks his model by adding and modifying a few key elements. First, he animates the oyster, which begs the mouse to bring her back to her natural environment—the sea. This is when the mouse decides to eat her, and gets blocked between the oyster's valves. At this point, Leonardo introduces the cat that finally kills the mouse. He also skips the moral, which admonishes those who are inclined to misdeeds that they may die out of their own misdeed. In Del Tuppo, the initial part with the oyster's request is completely missing, as well as the cat's intervention. Leonardo's changes operate once more on the level of experience: as it is unlikely that the oyster's valves would suddenly detach the mouse's head, he gives this role to a more credible cat.¹¹⁰

As in the fable of the crab, the rationalization operating on the content level is applied to the structural level as well. By introducing the oyster's request, Leonardo outlines a cause behind the mouse's action of biting the oyster. The mouse does not encounter the oyster by chance, as in Del Tuppo's version, but it is called there by necessity. The interaction of the two animals is traced back to a model of cause-effect in which the oyster begs the mouse—cause (*a*)—and the mouse bites the oyster—effect (*b*). Then, another chain of events is triggered, which needs the

¹¹⁰ Cf. Piccioni, "Il topo e l'ostrica," 67-68.

cat's action to get to its conclusion: the oyster blocks the mouse—cause (a_i)—and, finally, the cat kills the mouse—effect (b_i).¹¹¹

In modeling his fables, Leonardo transfers the traditional fable format to the context of experience and enriches or modifies the narration with details derived from empirical observation. Then, he reduces his narration to the interaction of the main characters (or forces), whose actions are strictly tied to one another as if they are part of the same mechanism. This mechanism can be interpreted as the “terrestrial machine,” mentioned on fol. 324v from Codex Atlanticus.¹¹² Eventually, the fable becomes a model to show the mechanical interaction of forces at the basis of every physical phenomenon.

In order to examine the fables' cause-effect dynamic in relation to the fables' structures, I created an analytical table. This table is composed of two main sections divided into two sub-categories. The first section is named CAUSES (sub-categories: force A; *action*); the second

¹¹¹ In Alciati's *Emblematum libri II* (1556) emblem LXXVI features an oyster and a mouse. This is probably modeled on the original Greek epigram by Antifilo di Bisanzio: “Captivus ob gulam. Regantor penus, et mensae corrosor herilis / Ostrea mus summis vidit hiulca labris. / Queis teneram apponens barbam salsa ossa momordit / Illa recluserunt tacta repente domum. / Depraensum et tetro tenuerunt carcere furem, / Semet in obscurum qui dederat tumulum.” (‘A mouse, king of the pantry, nibbler at the master's table, saw oysters with their shells just slightly open, applying his sensitive whiskers, he nibbled the deceptive bone. The oysters, when touched, suddenly slammed shut their house and held the thief, caught red-handed, in a noisome prison, a thief who had put himself into a lightless tomb.’) *Emblematum libri II*, LXXVI, “Captivus ob gulam.” *Emblematica Online*, accessed February 2, 2018, <http://emblematica.grainger.illinois.edu/detail/emblem/A56a086>.

¹¹² The text on the “terrestrial machine” is transcribed in full and discussed in the introduction to this chapter.

section is named EFFECTS (subcategories: force B; *reaction*).¹¹³ My analysis shows that fables can be gathered into three main groups according to their structure.

The first group (*I*) contains fables with a linear structure: one character (force A) develops an action, and another character (force B) reacts. The graph below shows a selection of fables belonging to this group, including the fable of the crab (*fab. 44*).

| CAUSES | | EFFECTS | |
|------------------|----------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| force A | <i>action a</i> | force B | <i>reaction b</i> |
| Il pesante ferro | si <i>reduce</i> in tanta sottilità mediante la lima, | che piccolo vento | poi lo <i>porta via</i> (<i>fab. 7.</i>) |
| Il noce | <i>mostrando</i> sopra una strada ai viandanti la ricchezza de' sua frutti, | ogni omo | lo <i>lapidava</i> (<i>fab. 31.</i>) |
| Il ligio | <i>si pose</i> sopra la ripa di tesino | e la corrente | <i>tirò</i> la ripa insieme col lilio (<i>fab. 41.</i>) |
| Il ragno | <i>credendo</i> trovar requie | nella buca della chiave | <i>trova la morte</i> (<i>fab. 52.</i>) |
| Il ragno | <i>stante</i> infra all'uve <i>pigliava</i> le mosche che in su tale uve si pasceva<n> | <i>venne</i> la vendemmia | <i>e fu pesto</i> il ragno insieme coll'uve (<i>fab. 45.</i>) |
| El granchio | <i>stando</i> sotto il sasso per <i>pigliar</i> e pesci che sotto a quello entravano, | la piena | <i>venne</i> con rovinoso precipitamento di sassi, e collo rotolarsi <i>sfracelloron</i> tal granchio (<i>fab. 44.</i>) |
| Il ragno | <i>volendo pigliare</i> la mosca con le sue false rete, fu | sopra quelle dal calabrone | crudelmente <i>morto</i> (<i>fab. 17.</i>) |
| La rete, | che <i>soleva pigliare</i> | li pesci, | fu <i>presa e portata via</i> dal furor de' pesci (<i>fab. 48.</i>) |

The second group (*II*) gathers fables with a more complex structure, in which we have a sequence of events, or a continuous succession of causes and effects, actions and reactions performed by one or more characters. Exemplary of this cluster is the fable of the oyster, in

¹¹³ See *Appendix I* for complete graph.

which at least two cause-effect sequences are featured; but the group gathers mainly fables in a longer format, comprised of articulated dialogues, detailed description of the setting, and the moral.

| CAUSES | | EFFECTS | |
|-------------------------|-------------------------------------------------------------------------------------|-------------------------|----------------------------------|
| force A, A ₁ | <i>action a, a₁</i> | force B, B ₁ | <i>reaction b, b₁</i> |
| Sendo l'ostriga | insieme colli al<tri> pesci [...] <i>priega</i> il ratto che al mare la conduca. | il ratto, | [...] <i>mordendola</i> , |
| questa | li <i>serra</i> la testa e sì lo <i>ferma</i> . | Viene la gatta | e l' <i>uccide</i> . |

The last group (*III*) is composed of fables with a simplified structure made of just one action. These fables can be defined as “titles:” they probably represent an idea that Leonardo aimed to develop in the future. Two exemplary fables of this group are that of the painter fighting against Nature (*fab. 6a*), and of the knife fighting against the nails (*fab. 6b*):

Il dipintore (force A) *disputa e gareggia* (*action a*) colla natura (force B).

Il coltello (force A) *caccia* dall'uomo (*action a*) le sua unghie, armadura naturale (force B).

This analysis does not mean to reduce into a rigid scheme all the differences in structure and content evident in Leonardo's fables. From a literary point of view, much has been said already with regard to the peculiarities of single fables, which cannot be reflected in such analysis.¹¹⁴ However, I believe this study sheds light on some overlooked details regarding Leonardo's creative process. In fact, critics generally assimilate both “titles” from the last group (*III*) and

¹¹⁴ See introduction to Chapter Two for reference bibliography on Leonardo's literary writings with a focus on his fables.

fables from the first group (*I*) to seminal texts—intended for a future literary development.¹¹⁵ As a result, Leonardo's outlet becomes the longer format fables (group *II*).

On the contrary, my study shows that if longer texts (group *II*) can be considered as pure literary exercises more or less in line with the fable tradition, fables belonging to the first group (*I*) consciously deviate from this tradition toward a more scientific-empirical representation. In addition, these are modeled on a cause-effect pattern that is arguably derived from Leonardo's studies of mechanics. This model often has a final visual and textual outcome in the form of emblems that follow the same scheme. Therefore, titles (group *III*) might have had a dual destination: that of a longer format fable, or that of a synthetic text preceding the emblem formulation. Eventually, the identification of this pattern allows for the re-evaluation of a cluster of Leonardo's fables (*I*) as part of a moral-scientific project that moves away from a conventional literary outcome that targets courtly consumption.

Between the 1490s and the early 1500s, while composing his fables, Leonardo is trying to give a definition of constitutive elements of physical phenomena.¹¹⁶ By displaying elements as

¹¹⁵ Cf. Leonardo da Vinci, *Scritti*, Vecce, ed., 68; Carlo Vecce, "Introduzione," in *Leonardo: favole e facezie*, Vecce and Cirnigliaro, eds., 12.

¹¹⁶ According to Leonardo, natural powers are entities located in between spiritual and material realms. Therefore, their study is bound to the physical dimension in which these powers can be perceived. In an attempt to describe natural powers, Leonardo defines the categories of elements from a physical point of view by analyzing their effects. Cf. Andrea Bernardoni, "Leonardo da Vinci e lo studio dei quattro elementi: la fisica del fuoco e le sue applicazioni," in *Leonardo da Vinci: Metodi e tecniche per la conoscenza*, Marani and Maffei, eds., 185-98: 187.

continually escaping from one another, folio 189r from the Codex Atlanticus documents

Leonardo's reflection in this respect:

2 sono le qualità degli elementi, cioè raro e denso; raro è detto come il foco, l'aria e ll'acqua; denso sol si pò dire alla terra.

2 sono le qualità di ciasscuno elemento, cioè continua e discontinua.

2 sono e' ~~moti cioè del continuo elemento e del discontinuo~~ le qualità delli elementi che ssi movano, cioè continua o discontinua.

2 sono e' moti naturali dei continui elementi e discontinui elementi, cioè moto d'elevatione e moto di declinatione.

2 sono le figure che fano gli elementi fugendo discontinuamente l'un dell'altro.

2 son quanto gli elementi continuamente fugano l'uno dell'altro.

2 sono e' moti che ffanno li elementi fugenti l'uno dell'altro.

2 son le cause perché l'uno elemento fuge dell'altro.¹¹⁷

Leonardo outlines the binary nature of elements (dense and rarified), of their qualities (continuous and discontinuous), and of their motion (motion of erection and motion of declination). He then specifies that elements, while escaping from one another, create 2 figures or images. In conclusion, 2 are the escaping elements and 2 are the motions they perform in their escape because 2 are the reasons why they escape from one another. This situation brings us back to the text which opened this analysis: the scientific observations from the Codex Atlanticus (fol. 663r) describing the water compressing and sending away the air (*prieme e scaccia*) up until it destroys it (*prieme e ruina*).

The binary nature of elements and of their motion reflects the binary scheme at the basis of Leonardo's fables and emblems. In this respect, the motion of erection can be identified as the

¹¹⁷ Leonardo da Vinci, Cod. Ar., fol. 189r.

“cause,” and the motion of declination as the “effect” in the cause-effect model. As Cesare Luporini suggested, this is the principle of action and reaction that Leonardo discovered in his studies on water and on the flight of birds, which he tried to generalize into other fields of knowledge.¹¹⁸ Leonardo probably believed that he could employ his fables to represent physical phenomena according to the cause-effect model. Furthermore, this model allowed him to examine and explain the functioning of phenomena with a geometric diagram of a unique immediacy.

Leonardo’s consideration of geometry as the basic unifying tool for his studies in mechanics brought him to develop the notion of “pyramidal powers.” This notion was drawn from Leon Battista Alberti and transferred to Leonardo’s mechanical investigation to signify an energy that propagates conically and develops following the laws of perspective. According to this approach, the scientific model adopted by Leonardo consisted in the extension of the visual model of “pyramidal decrease” from linear perspective—which is, for instance, the proportional decrease in the size of an image with increasing distance—to the study of all the powers given in nature. Power always relates proportionally to some measure (such as space or time) and this proportion describes the effects of power. The pyramidal power starts at the basis and ends at the peak of the pyramid, as illustrated on fol. 820r with the words “tanto” and “manco” (Figure 3-14)—where the fable and the emblem of the spider and the keyhole are featured. This model is applied by Leonardo to illustrate the gradual decrease of power in natural forces when they move

¹¹⁸ Luporini, *La mente di Leonardo*, 7.

away from their peak—which is their original situation in accordance with natural laws. As

Paolo Galluzzi argued:

Leonardo did not aim to dismantle the geometric foundation of the *scientia de ponderibus*. He too hoped to develop a strictly geometric method, albeit not to abstract entities such as flat geometric and solid shapes. His was to be a method linked to the bodies of the real world and the tangible factors that mark the perennial battle in the theatre of nature—man included—between force and resistance. A battle which governs equilibrium and its breakage, generates perturbations, presides over operations of lifting and dragging weights, and produces devastating knock-on effects.¹¹⁹

Through the means of analogy, Leonardo's fables and emblems seem to be modeled on the pyramidal decrease so as to illustrate small forces interacting with stronger natural powers. For instance, we saw the lily both uprising and bowing down in front of the river's current. However, through the analysis of various cases and circumstances of this interaction, Leonardo realizes that it is not always possible to "explain" the phenomena through numbers and measures. Therefore, he prefers to allow nature to "appear" as it is, in its unique features, in such a way that the observer could describe in a potentially infinite sum of combinations and in accordance with a vast number of different perspectives.¹²⁰

¹¹⁹ Paolo Galluzzi, "Against Those 'Authors Who by Relying Only on Their Imagination Make Themselves Interpreters between Nature and Man'." in *Leonardo da Vinci 1452-1519: The Design of the World*, Marani and Fiorio, eds., 261.

¹²⁰ Cf. Frosini, "Il concetto di forza in Leonardo da Vinci," in *Il codice Arundel di Leonardo*, Bernardoni, ed., 22. See also Francesca Fiorani and Alessandro Nova, *Leonardo da Vinci and Optics: Theory and Pictorial Practice* (Venice: Marsilio, 2013).

3.2.2. Force, Percussion, Weight, Motion

Dynamics of interaction and transformation of elements are among Leonardo's earliest passions. During the 1490s, his curiosity toward natural processes and his attempt to get acquainted with the philosophy of nature led him to develop a mechanical theory based on general categories of physics, which he identified as 'force,' 'weight,' 'percussion,' and 'motion.' As anticipated, these were the 'natural powers' at the foundation of every physical phenomenon according to classical mechanics. Leonardo acquired these categories from the traditional science of weight and put them to the test of experience, as expressed in his *memorandum* on folio 257r of the Codex Atlanticus, dated to 1513:¹²¹

Dove la scienza de' pesi è ingannata dalla pratica.

La scienza de' pesi è ingannata dalla sua pratica e in molte parte essa non s'accorda con essa scienza, né è possibile accordarla. E questo nasce dalli poli delle balance, mediante li quali di tali pesi si fa scienza. Li quali poli appresso alli antichi filosofi furo posti di nature di linea matematica e in alcuno loco in punti matematici, li quali punti e linee sono incorporee, e la pratica li pone corporei, perchè così comanda necessità, volendo sostenere il peso d'esse balance insieme colli pesi che sopra di lor si giudicano.

Ho trovato essi antichi essersi ingannati in esso giudizio de' pesi e questo inganno è nato perchè in gran parte della loro scienza hanno usato poli corporei e in gran parte poli matematici, cioè mentali ovvero incorporei.¹²²

¹²¹ Cf. Galluzzi, "Against Those 'Authors'," in *Leonardo da Vinci 1452-1519: The Design of the World*, Marani and Fiorio, eds., 262-63; Bernardoni, "Leonardo da Vinci e lo studio dei quattro elementi: la fisica del fuoco e le sue applicazioni," in *Leonardo da Vinci: Metodi e tecniche per la conoscenza*, Marani and Maffei, eds., 185; Galluzzi, *Leonardo e i proporzionanti*, 15; Frosini, "Il concetto di forza in Leonardo da Vinci," in *Il codice Arundel di Leonardo*, Bernardoni, ed., 115-16.

¹²² Leonardo da Vinci, Cod. Atl. 257r. "Where the science of weights is led into error by its practice. / The science of weights is led into error by its practice, which in many instances is not in agreement with this science, nor is it possible to bring it into agreement. This arises from the axes of the balances upon which the science of such weight depends. These axes, according to the ancient philosophers, were

Leonardo's objective was to re-establish a direct link between the abstract theories of the traditional science of weights and practical operations carried out in the real world using physical instruments.¹²³ His fables are situated within this search for a truthful representation of physical phenomena established entirely on an empirical foundation. In fact, they do not only settle for illustrating a natural picture according to the cause-effect model. Most of Leonardo's fables deal directly with the very categories of 'force,' 'weight,' 'percussion,' and 'motion.'

The most productive category is 'percussion,' which is displayed in all his fables on trees hit by stones and canes. These are the fables of the nut tree stoned (*fab.* 31) and the fig tree broken (*fab.* 32) by humans because they produce beautiful fruits to be gathered; of the *clematis vitalba* (a shrub also known as 'old man's beard') destroyed by pedestrians because it walks on the street (*fab.* 13); of the willow and the vine trees crippled together (*fab.* 50); of the chestnut and the fig trees trod and bent (*fab.* 24); and of the laurel, the myrtle and the pear (*fab.* 23), and the fig and the elm tree (*fab.* 33), which succumb to a similar death. Within the same category, we can include fables of different kind that illustrate the mechanism of percussion in connection

treated as having the nature of mathematical lines, and in some places as mathematical points. These points and lines are incorporeal, whereas practice treats them as corporeal, because this is what necessity demands for supporting the weight of these balances together with the weights on them that are to be judged. / I have found these ancients to be led into error in this judgment of weights, and this error is born because in much of their science they used corporeal axes, that is to say mental or incorporeal." Transl. Galluzzi, "Against Those 'Authors'," in *Leonardo da Vinci 1452-1519: The Design of the World*, Marani and Fiorio, eds., 262.

¹²³ Practical operations brought Leonardo to reformulate the rules of traditional mechanics by considering the effects of friction produced on the axis of the balance. *Ibid.*, 262-64.

with fire or heat. This is perfectly illustrated in the fable of the stone beaten by the steel, which bears with patience its torture and is rewarded with the generation of fire:

La pietra, essendo battuta dall'acciarolo del foco, forte si maravigliò, e con rigida voce disse a quello: "Che presunzio ti move a darmi fatica? Non mi dare affanno, che tu m'hai colto in iscambio. Io non dispiacei mai a nessuno." Al quale l'acciarolo rispose: "Se sarai paziente, vedrai che maraviglioso frutto uscirà di te." Alle quale parole la pietra, datosi pace, con pazienza stette forte al martire, e vide di sé nascere il maraviglioso foco, il quale, colla sua virtù operava in infinite cose.

Detta per quelli i quali spaventano ne' prencipi delli studi, e poi che a loro medesimi si dispongano potere comandare, e dare con pazienza opera continua a essi studi, di quelli si vede resultare cose di maravigliose dimostrazioni (*fab.* 39.)¹²⁴

The fable, which recalls the text on patience featured on the back of Leonardo's *proemio* on the mechanical arts, becomes exemplary of the good artist-technicians who patiently conduct their studies until they achieve marvelous results.

All fables illustrating trees dragged to earth by their fruits, are easily related to 'weight' as intended in applied mechanics: for example, the cedar tree growing a huge fruit at its peak (*fab.* 29); the peach tree that loads itself with too much fruit (*fab.* 30); and the inordinate weight of the gourds on the willow tree's branches:

E, non bastando tanto male, seguendo le zucche, cominciò, per disconcio peso, a tirare le cime de' teneri rami inver la terra, con istrane torture e disagio di quelli (*fab.* 19.)¹²⁵

¹²⁴ Leonardo da Vinci, Cod. Atl., 692v; *Scritti letterari*, Marinoni, ed., n. 32 "Being struck by the steel, a flintstone was quite surprised and said stiffly 'Why do you presume to trouble me so? Trouble me no more. You have mistaken me for someone else, for I have never hurt anyone.' The steel replied: 'If you're patient, you'll see what marvelous results you can produce.' At these words, the flint resigned itself and withstood the torment patiently, and soon saw itself produce a marvelous fire, whose power worked in countless ways. / This applies to those who are fearful when they begin their studies. Later, after they set out to attain mastery over themselves, and patiently give continual attention to their studies, we see them produce things of marvelous effects." Transl. Marsh, *Renaissance Fables*, 309.

Representative of the category of ‘motion’ is certainly the fable of the snow rolling down the mountain to escape the sun’s anger (*fabs.* 15), or that of the snowball rolling to increase its size:

La palla della neve quanto più rotolando discese delle montagne di neve, tanto più moltiplicò la sua magnitudine (*fab.* 49.)¹²⁶

The motion of the snowball is activated by its weight, which provokes friction and the gradual acceleration of the ball moving toward the plane. By means of the very same process, the motion of the file consumes the iron in fable 7. Another example of motion is the circular cycle of water in fable 1: the water evaporates because of the heat of the sun, then it freezes thanks to the air, and finally falls back on earth. In this case, Leonardo combines and represents together both mechanical and thermo-dynamical motion.

Winning actors in Leonardo’s fables are often characterized by the category of ‘force:’ the current swiping away the lily in fable 41; floodwaters crushing the spider in fable 44; the nut growing and destroying the wall in fable 26. Sometimes force can be uncontrolled, so that it revolts against its very source. This is the case of the voracious fire above the candle that by consuming the latter consumes itself (*fab.* 2) and of the fire that tries “per forza di bollore” (‘by persistent boiling’) to drive the water from the pot and then gets drown by it. Similarly,

¹²⁵ Leonardo da Vinci, Cod. Atl., 188r; *Scritti letterari*, Marinoni, ed., n. 22. “And if that was not bad enough, when the gourds grew, their inordinate weight dragged the tips of the delicate branches to the ground, causing them strange torments and discomfort.” Transl. Marsh, *Renaissance Fables*, 289-90.

¹²⁶ Leonardo da Vinci, Cod. Ar., 42v; *Scritti letterari*, Marinoni, ed., n. 42. “The farther the snowball rolled down the snow-covered mountain, the more it increased its volume.” Transl. Marsh, *Renaissance Fables*, 313.

fable 47 shows the torrent carrying so much earth and gravel into its bed that it is forced to change its course:

Il torrente portò tanto di terra e pietre nel suo letto, che fu po' constretto a mutar di sito
(*fab.* 47.)¹²⁷

Obviously, there are fables shifting among more than one category, or that perhaps are not meant to belong to any of these categories; therefore, we should resist any systematic categorization. Among the others, fable 38 relates to both motion and percussion, as it tells about the stone that rolls down the hill to reach its companions and, as soon as it gets to the long-awaited ground, wagon wheels crush it.¹²⁸ Then we have the fable of the fish and the net, in which the motion of the fish generates a force that breaks the net (*fab.* 48). Many other examples could be made. To any extent, we believe that our account already gave an idea of the robust tie that links Leonardo's literary writings and his reflection on the mechanical interaction of motion and force, weight and percussion in their possible manifestations.¹²⁹

Recent scholarly examination of the Madrid manuscripts and other relevant documents confirm that Leonardo's treatise on mechanics was composed of two parts. The first part dealt with mechanical theory and focused on the analysis of the categories of force, motion, weight, and percussion. The second part was instead devoted to applied mechanics and to the use of

¹²⁷ Leonardo da Vinci, Cod. Ar., 42v. *Scritti letterari*, Marinoni, ed., n. 40. "The torrent carried so much earth and gravel to its bed that it was forced to change course." Transl. Marsh, *Renaissance Fables*, 313.

¹²⁸ This fable is probably modeled after Alberti's *Intercenales*. Cf. Vecce, *La biblioteca perduta*, 116.

¹²⁹ According to Cesare Luporini, Leonardo's difficulty in defining 'force' brought him to ascribe to it a "spiritual quality," for it could only be experienced by its effects, and initiated a series of questions that ultimately he could never answer. Cf. Luporini, *La mente di Leonardo*, 8.

pulleys, wheels and screws. Most of Leonardo's fables deal directly with force and other categories derived from mechanical theory. One of them even appears beside a preface arguably meant for this treatise. Therefore, it is not difficult to see how these fables would have beautifully fit in the first section of Leonardo's treatise on mechanics.¹³⁰ What is more, Leonardo's fables strikingly relate to applied mechanics as well—as the functioning of wheels, pulleys and screws illustrates (Figure 3-15).

Wheels intended as mechanical organisms are recalled in the interaction of the net and the fish, protagonists of fable 41:

La rete, che soleva pigliare i pesci, fu presa e portata via dal furor de' pesci (*fab.* 48.)¹³¹

The fishing net functions according to a clack valve mechanism composed of a clack valve (*a*) and a wheel (*b*). In this mechanism, the wheel moves counterclockwise up until the wheel's tooth (the fish gill) reaches the clack valve (the mesh of the net). At this point, the wheel cannot go back: the fish is caught. Leonardo was well acquainted with this machine, as he employed it in his drawings of catapults and other engineering projects (3-15.a). In the fable, the force of Nature wins over the clack valve mechanism by using a very similar principle: that of a water turbine. By waging its tail, the fish receives a thrust from the water that allows it to move forward and break the net. Mechanical wheels are reenacted also in the rotating movement of the

¹³⁰ Cf. introduction to this chapter, where the fable of the thrushes is examined in connection with one of Leonardo's prefaces dealing with the mechanical arts.

¹³¹ Leonardo da Vinci, Cod. Ar., fol. 42v; *Scritti*, Marinoni, ed., n. 41. "The net that used to catch fish was seized and carried off by the fish fury." Transl., Marsh, *Renaissance Fables*, 313.

wagon's wheels crashing the stone in fable 38 and, more strikingly, in the description of the flight of the magpie in fable 19. The movement of the magpie is described with such scientific exactitude that the animal becomes a fabulous machine moving toward the sky activated by its ship's wheel:

Allora la sgazza, fatto e fermi alquanti capitoli di novo col salice, e massimo che bissie o faine sopra sè mai non accettassi, alzato la coda e abbassato la testa, e gittatasi del ramo, rendé il suo peso all'ali, e quelle battendo sopra la fuggitiva aria, ora qua, ora in là curiosamente col timon della coda dirizzandosi, pervenne a una zucca, e con bel saluto e alquante bone parole, impetrò le dimandate semenze (*fab.* 19.)¹³²

The use of pulleys is perfectly exemplified in the fables' account of the peach, the cedar, and the fig trees carried down by the weight of their fruits (*fabs.* 30, 10, 29, 32), the willow's branches dragged to the ground by the weight of the gourds (*fab.* 19), and the cedar uprooted by the wind blowing at its peak:

Il cedro insuperbito della sua bellezza, dubita delle piante che li son d'intorno, e fattolesi torre innanzi, il vento poi, non essendo interrotto, lo gittò per terra diradicato (*fab.* 10.)¹³³

The tree functions as a pulley activated, respectively, by the weight of its fruits, the gourds or the wind. In the fable of the nut and the wall (*fab.* 26), we can also envision a pulley in the distance between the hole where the wall hosts the nut and the crack opened by the nut's growth (3-15.b).

¹³² Leonardo da Vinci, Cod. Atl., fol. 188r; *Scritti*, Marinoni, ed., n. 7. "After several additional terms had been agreed upon—especially, that the willow would never admit any snakes or martens—the magpie raised its tail, bowed its head, and sprang from the branch. Trusting its weight to its wings, which it beat in the fleeting air, the inquisitive bird flew this way and that, guiding itself by its tail as a rudder, until it came upon a gourd. After a handsome bow and a few friendly words, the magpie obtained the requested seeds." Transl., Marsh, *Renaissance Fables*, 289.

¹³³ Leonardo da Vinci, Cod. Atl., fol. 188v; *Scritti*, Marinoni, ed., n. 12. "A citron tree grew proud of its beauty, and disdaining the plants around it, had them removed. But the wind, now striking it directly, uprooted it and cast it to the ground." Transl., Marsh, *Renaissance Fables*, 283.

The last mechanical organism featured in Leonardo's fables is the 'screw.' This is clearly depicted in fable 52: the screw is the key that twists and smashes the spider in the keyhole. Similarly, Leonardo's reflection on the screw origins the fable of the pen and the sharpener:

Necessaria compagnia ha la penna col temperatorio poichè l'una senza l'altro non vale troppo
(*fab.* 51.)¹³⁴

The pencil has value because the turning of the sharpener makes it function. At the same time, as the fable implies, the sharpener gradually consumes the pencil. What this fable adds to our discourse is a lucid comment on the constant mechanical interaction of elements at the foundation of these fables (3-15.c).

3.2.3. *Mechanical Metaphors: Word-and-Image Consumption*

Leonardo was suspicious of authors exercising their ingenuity on mathematical models of nature because he believed that everything was imperfect and subjected to the law of 'consumption' (or consummation).¹³⁵

Questo ci dimostra non potere dare o fare cosa d'alcuna perfetta osservazione, imperò che tu vorrai fare il perfetto circolo per lo moto dell'una delle punte del sesto e che tu confessi ovvero confermi quello che di sopra si propone, cioè che per lungo moto tale punta s'abbia a consummare, egli è necessario concedere che se 'l tutto si consuma con tutto un certo tempo,

¹³⁴ Leonardo da Vinci, Ms. L, back cover; *Scritti*, Marinoni, ed., n. 33. "The pen finds the company of the inkwell both necessary and useful, for without the other neither of them is worth much." Transl., Marsh, *Renaissance Fables*, 313.

¹³⁵ Cf. Galluzzi, "Against Those 'Authors'," in *Leonardo da Vinci 1452-1519: The Design of the World*, Marani and Fiorio, eds., 264; Romano Nanni, "Catastrofi e armonie," in *Leonardo da Vinci on Nature*, Frosini and Nova, eds., 95-118.

che ancora la parte nella parte d'esso tempo s'abbia a consumare e che la indivisibile nello indivisibile tempo dia principio a tale consumazione.¹³⁶

'Consumption' is a widely abused term in Leonardo's fables that relates to the mechanical realm.

It can in fact illustrate a mechanical transformation, such as in the fable of the iron and the file:

Il pesante ferro si reduce in tanta sottilità mediante la lima, che picciolo vento poi lo porta via
(*fab. 7.*)¹³⁷

By scratching the heavy iron's surface, the file causes friction and, as a consequence, the abrasion and gradual disintegration of the iron.

However, consumption is not limited to the field of mechanics. In his fables, Leonardo easily transfers consumption to the field of thermodynamics, where it becomes the result of a chemical transformation. This particular transformation is displayed in Leonardo's various fables on fire and heating. Heat liberates the energy that a body contains to the point that it changes the nature of that body. For instance, in fable 2 the flame heats the candle so that it moves from solid to liquid form. Similarly, in fable 1 the fire evaporates into the air; in fables 20 and 25 candles and lamps turn the butterfly into dust; and in fable 14 the warm body of the mule

¹³⁶ Leonardo da Vinci, Cod. For. II, fol. 133r. "This proves that it is impossible to give or make anything without absolute exactness; for if you want to make a perfect circle by moving one of the point of the compasses, and you admit what is set forth above, that this point tends to be worn away in a certain space of time and the part will be consumed in part of this time; and the beginning of such consumption will be indivisible in indivisible time." Transl. Galluzzi, "Against Those 'Authors'," in *Leonardo da Vinci 1452-1519: The Design of the World*, Marani and Fiorio, eds., 264.

¹³⁷ Leonardo da Vinci, Cod. For. III, 47r; *Scritti*, Marinoni, ed., n. 52. "Heavy iron is reduced to such subtlety by a file that even a slight breeze blows it away." Transl., Marsh, *Renaissance Fables*, 281.

melts the ice. The sun is obviously one of the preferred actors in this thermo-chemical dynamic.

If in fable 15 it melts the snow, in fable 37 the sun creates the rust that wears the razor away:

Favola.

Uscendo un giorno il rasoio di quel manico col quale si fa guaina a sé medesimo, e postosi al sole, vide lo sole ispecchiarsi nel suo corpo: della qual cosa prese somma gloria, e rivolto col pensiero indirieto, cominciò con seco medesimo a dire: “Or tornerò io più a quella bottega, della quale novamente uscito sono? Certo no. Non piaccia agli Dei, che sì splendida bellezza caggia in tanta viltà d’animo! Che pazzia sarebbe quella la qual mi conducessi a radere le insaponate barbe de’ rustichi villani e fare sì meccaniche operazione? Or è questo corpo da simili esercizi? Certo no. Io mi vogli<o> nascondere in qualche occulto loco, e lì con tranquillo riposo passare la mia vita.” E così, nascosto per alquanti mesi, un giorno ritornato all’aria, e uscito fori della sua guaina, vide sé essere fatto a similitudine d’una rugginente sega, e la sua superficie non ispecchiare più lo splendente sole. Con vano pentimento indarno pianse lo irreparabile danno, con seco dicendo: “O quan<to> meglio era esercitare col barbiere il mi’ perduto taglio di tanta sottilità. Dov’è la lustrante superfizie? Certo la fastidiosa e brutta ruggine l’ha consumata.”

Questo medesimo accade nelli ingegni, che ’n iscambio dello esercizio, si dànno all’ozio, i quali, a similitudine del sopradetto rasoio, perde la tagliente sua sottilità e la ruggine dell’ignoranza guasta la sua forma (*fab. 37.*)¹³⁸

This delightful passage brings Leonardo’s reflection on the *artes mechanicae* to a different level:

the fable becomes a ‘mechanical metaphor.’ The mechanical-chemical transformation now acts

¹³⁸ Leonardo da Vinci, Cod. Atl., 477v; *Scritti*, Marinoni, ed., n. 29. “Fable. / One day a razor stretched out of the handle that sheathed it, and lying in the sunlight, it saw the sun reflected on its surface. It exulted in this image, and thinking back, began to say to itself: “Shall I now return to the storeroom I just left? Certainly not. The gods forbid that my splendid beauty should turn into a base cowardice! What madness could lead me to shave the soapy beards of rustic peasant and to do such menial labor? Is my body suited to such tasks? Certainly not. I would rather hide in an obscure place, and spend my life in tranquil repose.” So, after hiding for several months, the razor came out of its sheath one day, and observed that it now looked like a rusty saw and that its surface no longer reflected the brilliant sun. With vain contrition, it cried over its irreparable loss, and said to itself: “How much better it was to let the barber use my subtle edge, now lost! Where now is my shining surface? Truly foul and loathsome rust has worn it away. / The same thing happens to our wits when they turn to idleness instead of exercise. For like the razor, they lose their sharp subtlety, and the rust of ignorance destroys their fine form.” Transl., Marsh, *Renaissance Fables*, 307.

in the background, leaving place to Leonardo's reflection on the importance of exercising *ingegno*. With the term *ingegno*, Leonardo means the 'wit,' the 'genius' of the inventor.

It is especially charming that the razor reaches Leonardo not from the fable tradition, but from a source of a different kind: Burchiello's poetry. In Burchiello's *Sonnets*—belonging to his library from at least 1495—Leonardo finds an incredible repertoire of daily life objects and mechanical tools that arranges poetry in absurd juxtapositions.¹³⁹ One of the most interesting actors of Burchiello's comic performance is certainly the razor ready to pounce on the poetry:

La poesia contende col rasoio
E spesso hanno per me di gran question,
Ella dicendo a lui: "Per che cagioni
Mi cavi el mie Burchiel dello scrittoio?"
E lui ringhiera fa del colatoio
E va in bigoncia a dir le suo ragioni,
E comincia "Io ti priego mi perdoni,
Donna, s'alquanto nel parlar ti noio:
Si non fuss'io e l'acqua e 'l ranno caldo
Burchiel si rimarrebbe in sul colore
D'un moccolin di cera e di smeraldo."
Et ella a lui: "Tu se' in grand'errore:
D'un tal disio porta il suo petto caldo
Ch'egli non ha in sì vil bassezza il core."
Et io: "Non più romore.
Ch'e' non ci corra la secchia e 'l bacino,
Ma chi me<glio> mi vuol paghi el vino."¹⁴⁰

¹³⁹ Cf. Dario del Puppo, "Where 'High' and 'Low' Meet: Text and Document in a Humanistic Manuscript of Burchiello's Poetry (Pluteo XL. 48)," in *Text: An Interdisciplinary Annual of Textual Studies* (11), William Speed Hill and Edward M. Burns, eds. (Ann Arbor: The University of Michigan Press, 1998), 207-223.

¹⁴⁰ *I sonetti del Burchiello*, Zaccarello, ed., CXXVI, vv. 1-17, 126-27. "Poetry argues with the Razor, / and they raise important questions for me to contend with, / she says to him: 'Why do you drag your Burchiello / away from the writing desk?' // And he, the razor, gripping the rim of the basin, / takes the

Burchiello's 'razor' and 'poetry' claim their superiority in the face of each other and compete for the poet's interest. It is an exquisite minute *paragone* staged by the razor as representative of the mechanical arts, and poetry, supporter of the humanistic circle. At the same time, this is a contest between things and words, real objects and poetic images. Leonardo seizes this spectacular vision from literature to build his defense of the mechanical arts. This is the only time that he directly addresses the *artes mechanicae* in his fables.

Leonardo's razor laments the *meccaniche operazioni* ('mechanical labors,' 'menial works'), or *esercizi* ('practices,' 'practical tasks') that it used to perform at the *bottega* ('workshop'). Willing to reject tasks that he judges appropriate to inferior individuals and peasants, the razor is worn out by 'foul and loathsome rust,' that is, idleness. This is clearly outlined in the moral, meant to admonish wits that turn to idleness instead of exercise. In this way, the moral strikes both the self-import humanists who do not appreciate mechanical labor, but also the inventors (artists and technicians) who do not practice their art.

Together with the razor, from Burchiello Leonardo draws steel (*acciarolo*: *fab.* 39) and the knife (*fab.* 6b); the mirror and the pot (*laveggio*: *fab.* 5); the light and the candle (*fabs.* 2, 20); the

stand to plead his case; / and begins: 'I beg that you forgive me, lady Poetry, / if I offend you with my speech: // Were it not for me, and Water and Lather, / Burchiel would be driven into poverty / and look as weak as melted candlewax.' // And Poetry to the Razor: 'You are greatly mistaken, / such desire he carries in his breast, / that his heart does not have such vile baseness.' // And I: 'If you don't quit the racket, / Bucket and Basin will join the fight; / but whoever wishes me well, pays for my wine'." Transl. del Puppo, "Where 'High' and 'Low' Meet," in *Text: An Interdisciplinary Annual of Textual Studies* (11), William Speed Hill and Edward M. Burns, eds., 210.

pen and the sharpener (*fab.* 51); and the ink and the paper (*fab.* 4).¹⁴¹ In his continuous migration from word to image, objects and tools of this kind become Leonardo's favorite actors. The productivity of objects in Leonardo's *oeuvre* reaches a climax in his rebuses, in which food, clothes, house furnishings, and—above all—technical tools are gathered. Increasingly, mechanical instruments become the basis of Leonardo's most intense visions and successful interpretations of the interaction between arts and crafts, humans and nature, and Nature and Art.¹⁴²

In the last pages of Manuscript H, spanning almost eight full folios (from fol. 97v to 101r), we have a catalogue of objects—mainly mechanical devices—accompanied by moral sentences (Figure 3-16). This is an incredible document of Leonardo's further attempt to transform his 'mechanical metaphors' into words and images:

| | |
|---------------------------------------------|----------------------------------------|
| | per andare dritto. |
| [1] <i>Mechanical levelling device.</i> | |
| [2] <i>Blazing sun and sextant.</i> | misura i gradi de l'alt<zz>a del sole. |
| [3] <i>Square and various optical rays.</i> | ri. |
| [4] <i>Sounding line.</i> | per meglio conoscere dov'io mi trovo. |
| [5] <i>Cluster of lenses.</i> | per meglio conoscere. ¹⁴³ |

Folio 97v opens with a mechanical level [1]—a tool for measuring the angle of a surface in relation to a horizontal plan—followed by a drawing of a blazing sun emitting a ray viewed through a sextant [2]. Then, we have drawings of optical rays [3] and of a sounding line,

¹⁴¹ Cf. Dionisotti, "Leonardo uomo di lettere," 188.

¹⁴² Cf. Marinoni, *I rebus di Leonardo*, 147.

¹⁴³ Leonardo da Vinci, Ms. H, fol. 97v. "For proceeding straight. [1] [2] It measures the degrees of the sun's height. [3] [4] For recognizing well where I am. [5] For knowing better." Modified transl. Venerella, *Manuscript H*, 107-08. The object labeled "Per meglio conoscere" is difficult to identify. Pedretti suggested interpreting it as a pair of glasses. Cf. Pedretti, *Commentary*, I, 389.

consisting of a weight suspended from a cord passing through a drum, to which a crank communicates motion [4].¹⁴⁴ However, in the form of a quick sketch, Leonardo clearly illustrates the functioning of these mechanisms and all their components. Finally, each object is equipped with a caption that is not just a description of the object. It suggests a metaphorical meaning supposedly residing within the object. The level, the sextant, the sounding line, and the lenses [5] are labor tools intended for the production of knowledge: “per andare dritto;” “per meglio conoscere;” “per meglio conoscere dove io mio trovo” (3-16.a).

In the catalogue, scientific-technological tools follow each other in a continuous flow, rarely interrupted by notes of different kind, as it happens in the subsequent folio 98r:

| | |
|-------------------------------------------|-------------------------------------------------------|
| | l'ermellino col fango. |
| | Galeazzo tra tempo tranquillo e figura di Fortuna. |
| | lo strugolo che colla pazienza fa nascere i figlioli. |
| | l'oro in verghe s'affinisce nel fuoco. |
| [6] <i>Indistinct symmetrical figure.</i> | se tu a me io a te. ¹⁴⁵ |

The second page of the series opens with allegorical images with a clear political function. The *ermellino col fango* should in fact refer to Ludovico il Moro, defined by the poet Bernardo Bellincioni as “l’italico morel, bianco ermellino.”¹⁴⁶ *Galeazzo* is his nephew Gian Galeazzo Maria. The ermine is also featured on an exquisite drawing by Leonardo for a medal preserved at the Cambridge Fitzwilliam Museum (inv. PD 120-1961), which is probably the outcome of these

¹⁴⁴ Cf. Venerella, *Manuscript H*, 107-08.

¹⁴⁵ Leonardo da Vinci, Ms. H, fol. 98v. “The ermine with the mud. / Galeazzo between calm weather and the figure of a Fortune. / The ostrich, which uses patience to cause its young to be born. / Bars of gold are refined in the fire. [6] If you to me, and I, to you.” Modified transl. Venerella, *Manuscript H*, 108.

¹⁴⁶ Bernardo Bellincioni, *Sonetti, canzoni, capitoli, sestine ed altre rime* (Milan: Filippo di Mantegaz, 1493), XXVII.

notes (3-16.b).¹⁴⁷ Similarly, in the last page of the series (fol. 101r) allegorical notes on the falcon and mechanical tools (a nozzle and a pendulum) furnish the basis for the emblem *falcon-tempo* and therefore confirm their political address.

And yet, the political framework is almost flattened by Leonardo's reflections on the work of art and on the role of the artist-technician, characterized by committed, practical labor tied to mechanical devices. In fact, the following notation pertains to the metalworker's technical skill of refining gold with fire. Then, a brief note expresses resentment about a grievance: is Leonardo referring to the depreciation of his work as an artist-technician? The sequence continues on fol. 98v, praising the committed work of the artist (*tela*) that can fix unjust suffering:

| | |
|-----------------------------------|--------------------------------------------------|
| [7] <i>Shuttle for weaving.</i> | scola tanto mi moverò che la tela sia finita. |
| [8] <i>Skimmer.</i> | così di schiuman le tristitie. |
| [9] <i>Blow to cut a diamond.</i> | diamante. ogni cosa pel. |
| [10] <i>Plow.</i> | per distirpare il tristo. ¹⁴⁸ |

The combination of the weaving shuttle [7], the diamond [9], and the plow [10] suggest the meaning of resistance and constant motion toward a fixed direction. The skimmer [8]—intended as the tool for removing foam from broth—is connected in its healing function with the plow [10] by means of the corresponding captions (“così si schiuman le tristizie;” “per distirpare il tristo”) (3-16.c). These are the perfect ingredients for one of the most successful of

¹⁴⁷ Cf. Marani, “*The Movements of the Soul*” in in *Leonardo da Vinci 1452-1519: The Design of the World*, Marani and Fiorio, eds., 230.

¹⁴⁸ Leonardo da Vinci, Ms. H, fol. 98v. “[7] I will continue to move until the fabric [also canvas; net] is finished. [8] In this way, the impurities are skimmed away. [9] Everything for the... / For uprooting evil [10].” Modified transl. Venerella, *Manuscript H*, 109. Cf. Pedretti, *Commentary*, 681-702.

Leonardo's *imprese*: the plough labeled *hostinato rigore* (RL 12,701). Ladislao Reti's analysis revealed that Leonardo designed this emblem for Cesare Borgia to signify his constant loyalty toward the French Crown.¹⁴⁹ And yet, on these pages the so called 'fixed direction' does seem to refer to Leonardo's own labor: the finished work of art—the canvas of a painting (*tela*).

Toward the end of the sequence, the atmosphere gets gloomier and consumption of things becomes the undisputed protagonist of Leonardo's stream of thoughts.

| | |
|---------------------------------------------------|----------------------------------------------------------------|
| [11] <i>Clamp straightening a twisted object.</i> | ogni torto si dirizza. |
| [12] <i>Sword with a corroded blade.</i> | per non esercitare. |
| | cogli la gremigna, perché le bon'erbe crescano. ¹⁵⁰ |

On fol. 99r, a clamp straightens a twisted object [11]. Through perseverance injustice is punished; it says: 'every tort is straightened.' Then, the rusted sword, labeled 'for not exercising,' becomes the lucid emblem of the fable of the razor: an exhortation to resist, to work hard on the path of knowledge [12]. This concept is reinforced by the recurring themes of pointing toward an end (*andare dritto*) and reaching a better knowledge (*per meglio conoscere*) (3-16.d).

The apparently scattered thoughts on fol. 99v directly relate to Leonardo's fables and emblems that illustrate an analogous meaning (3-16.e):

| | |
|-----------------------------------------------|-------------------------------------------------|
| [13] <i>A stalk of millet</i> | di bene in meglio. |
| [14] <i>The hoof and foreleg of a horse.</i> | formice. |
| [15] <i>An tool that rips apart a branch.</i> | così si separa la triste unione. ¹⁵¹ |

¹⁴⁹ We also have what is probably a precedent version of the emblem, labeled "Non uscire dal solco." Cf. Reti, "*Non si volta chi a stella è fisso.*" 7-54.

¹⁵⁰ Leonardo da Vinci, Ms. H, fol. 99r. "[11] Every wrong will be put right. [12] Because of not being put to use. / Gather the weeds in order that the good grasses may grow." Modified transl. Venerella, *Manuscript H*, 109.

Particularly, the first two drawings and captions [13; 14] clearly re-enact the fable of the ant and the millet:

Favola.

La formica trovato uno grano di miglio, il grano sentendosi preso da quella gridò: “Se mi fai tanto piacere di lasciarmi fruire il mio desiderio del nascere, io ti renderò cento me medesimi.” E così fu fatto (*fab.* 11.)¹⁵²

One of the few fables with a positive outcome, this text perfectly exemplifies that foresight is eventually rewarded. In Leonardo’s bestiary, the ant signifies prudence in a similar context. Then, it is singled out together with the millet in rebus 108. In the pictograph, images of a stone (*masso*), a bunch of millet (*miglio*), a wing (*ala*) and an ant (*formica*) combine to signify: “m’assomiglio alla formica” (‘I resemble the ant’).¹⁵³ In this delightful visual motif, Leonardo identifies with the ant and, eventually, the millet—and with their patient and serious collaborative work.

Leonardo’s stream of thought continues on folio 100, showing artisanal tools devoted to healing pain [16] and knowledge production [17]. Then we have a prophetic sentence on

¹⁵¹ Leonardo da Vinci, Ms. H, fol. 99v. “[13] From good to better. [14] Ants. [15] An unhappy union is separated like this.” Modified transl. Venerella, *Manuscript H*, 110.

¹⁵² Leonardo da Vinci, Cod. Atl., 188v; *Scritti*, Marinoni, ed., n. 13. “Fable. / When an ant found a grain of millet and picked it up, it cried out: ‘If you do me a great favor and let me achieve my desire to sprout, I shall give you a hundred of me.’ And that’s what happened.” Transl., Marsh, *Renaissance Fables*, 283.

¹⁵³ Cf. Marinoni, *I rebus di Leonardo*, 207.

consumption provoked by small things such as the powder of the bombard—and the millet, the ant, and the *picciol vento* from fables 11 and 7 (3-16.f):¹⁵⁴

| | |
|-------------------------------------------|-------------------------------------------------------|
| [16] <i>Pliers holding a tooth.</i> | per levare il dolore. |
| [17] <i>Anemoscope.</i> | per conoscere meglio i venti. |
| [18] <i>Bombard that shoots a bullet.</i> | di che lieve cosa nasce sì gran ruina! ¹⁵⁵ |

In the end of the catalogue, on the *verso* of the last page, Leonardo seems to linger once more on the *paragone* of the arts. True testing unveils ‘fine gold’ [19]. Ultimately, good artwork prevails [20]:

| | |
|------------------------------------------------------------|------------------------------------------------------|
| [19] <i>Bellows blowing on a crucible.</i> | al cimento si conosce il fine oro. |
| [20] <i>Touchstone.</i> ¹⁵⁶ | al paragone. |
| [21] <i>Tongs holding a crucible pouring molten metal.</i> | tal fia il getto, qual fia la stampa. ¹⁵⁷ |

The catalogue is abruptly interrupted at this point (3-16.g). However, the image of the bellows appears in another series of emblematic drawings found in Manuscript M (Figure 3-17). On fol. 4r a bellows blow in vain toward the flame from each side of a lantern.¹⁵⁸ In the underlying *motto* Leonardo returns to the theme of patience that endures misdeed: “Tale è ’l mal che non mi noce,

¹⁵⁴ Pedretti noted that the “light thing” refers to the powder. Cf. Pedretti, *Commentary*, 681-702.

¹⁵⁵ Leonardo da Vinci, Ms. H, fol. 100r. “[16] To remove the pain. [17] In order to know the winds better. [18] What a great ruin arises from such a light thing!” Modified transl. Venerella, *Manuscript H*, 110-11.

¹⁵⁶ As explained by Venerella, for touchstone Leonardo means: “a black siliceous stone related to flint; used in old times to test the purity of gold or silver, as a streak was left on the stone when rubbed by the precious metals.” Venerella, *Manuscript H*, 111.

¹⁵⁷ Leonardo da Vinci, Ms. H, fol. 100v. “[19] It is through testing that fine gold is recognized. [20] For the test. [21] Such as the mold is, so will the casting be.” Modified transl. Venerella, *Manuscript H*, 111.

¹⁵⁸ A similar lantern appears on Windsor folio 12,701. Cf. Reti, “*Non si volta chi a stella è fisso.*” 10ss; Ladislao Reti, “*Tal è ’l mal che non mi noce, quale il bene che non mi giova: interpretazione dell’ ‘impresa’ della lampada,*” *Raccolta Vinciana* 20 (1964): 325-330; John Venerella, *Manuscript M*, in *The Manuscripts of Leonardo da Vinci in the Institute de France*, ed. Venerella, 8.

quale il bene che non mi giova.”¹⁵⁹ Another allegorical notation on ingratitude draws directly from Leon Battista Alberti’s *Apologhi*, which follows in a different *ductus*: “Li giunchi che ritengono le pagliucole che li annegano.” (3-17.a).¹⁶⁰

Folio 4v shows the evolution of the preceding drawing in two stages. In the first sketch, we see the lantern’s candle in a tilted position, labeled: “Chi altri offende, sé non sicura.”¹⁶¹ In the second sketch, the bellows, which here resemble a bagpipe, is smashed into a clamp (3-17.b).¹⁶² This is arguably the same clamp that we encountered on fol. 99r from Manuscript H, labeled: ‘every tort is straightened.’ We can now identify the ‘twisted object’ on the same page with our bellows-bagpipe. The ‘indistinct symmetrical figure’¹⁶³ beside the *mottos* “l’oro in verghe s’affinisce nel fuoco” and “se tu a me io a te” on fol. 98r is probably the very same bellows used to address the theme of reprisal.

On folio 5r from Manuscript M, besides two sketches of decorated alphabet letters,¹⁶⁴ three drawings complete the sequence on the bellows (3-17.c). The lantern’s candle is turned

¹⁵⁹ Leonardo da Vinci, Ms. M, fol. 4r. “The evil that does me no harm is the same as the good that does me no favor.” Transl. Venerella, *Manuscript M*, 8.

¹⁶⁰ Leonardo da Vinci, Ms. M, fol. 4r. “The rushes that retain the blades of straw, which drown them.” Transl. Venerella, *Manuscript M*, 8. Pedretti identified the sources of both the allegorical motifs in two of Leon Battista Alberti’s *Apologhi*. Cf. Pedretti, *Commentary*, 699.

¹⁶¹ Leonardo da Vinci, Ms. M, fol. 4v. “One who injures others does not secure himself.” Transl. Venerella, *Manuscript M*, 9.

¹⁶² Venerella identified the drawing as “a bagpipe, whose chanter and drone pipe are being squeezed in a clamp.” Ibid.

¹⁶³ Cf. Venerella, *Manuscript H*, 108.

¹⁶⁴ Girolamo Calvi connected these ornamental letters to a study for Luca Pacioli’s *Divina proportione*. Cf. Calvi, *I manoscritti di Leonardo da Vinci*, 141. See also Vecce, “La parola e l’icona,” 180.

downward and the bellows' destruction is illustrated in two possible formats. First, labeled as 'ingratitude,' it burns in the fire produced by the flame that it revived. Then, it gets crushed, once again, in the clamp—this time assuming the appearance of a tongue, labeled "sta stilli" ('it is stilled').¹⁶⁵ Among all the possible meanings elicited by such an image, one charmingly aligns with the previously analyzed mechanical metaphors on constant practice, patient labor and punished injustice.

The bellows, the bagpipe and the tongue are all perfect emblems for the chattering *trombetti*, mere imitators of Nature, only able to produce empty, vapid air. Because of their defamation of the artist-technicians, the *trombetti* get silenced and destroyed. The mechanical devices employed by the artist-technicians (the clamp), or Nature herself (the fire) will eventually punish their ingratitude. We must admit that both the clamp and the bellows are technical tools—Leonardo employs the bellows in his studies of floating systems for walking on water and breathing underwater on folio 26r from the Codex Atlanticus. Therefore, they can just represent artificial tools killing themselves or won over by Nature.

¹⁶⁵ Beneath the clamp Leonardo writes a notation of difficult interpretation: "Sta stilli." Carlo Vecce interpreted the inscription as "sta a' stili," meaning "respect the rules of the courtly environment, and observe prudent silence." Cf. Vecce, Leonardo da Vinci: *Scritti*, 99. According to Venerella "stillo" in this context means "an expedient," or as Battaglia puts it "a subtle and ingenious contrivance for achieving a result, in particular for obtaining some gain." "Star[si] stilli" can, therefore, mean "to refrain" or "to desist." Accordingly—or coincidentally—the term *still* in Milanese dialect is a command form, meaning "Zitto, sta cheto," 'be quiet.' In his discussion of the text, Venerella concludes: "The drawing speaks eloquently about Leonardo's opinion on the extremes to which one must have to resort to stop the wagging tongue." Cf. Venerella, *Manuscript M*, 10; Venerella, *Introduction*, in *Ibid.*, XXVII-XXVIII.

In conclusion, mechanics and mechanical tools provide Leonardo with unique subjects for good *imprese* intended for his patrons, and a favored method to investigate and represent natural processes and the relationship between Nature and artifice. In addition, they proved to be particularly sharp tools to conduct Leonardo's battle toward the re-evaluation of painting and the mechanical arts. In this respect, after 1500 Leonardo created a very curious picture, in which he gathers almost all the objects mentioned in this last chapter. It is a deluge of daily life things, such as plates, pans, cups, rakes, glasses, pliers, nails, necklaces, and musical instruments. They fall from a cloud framed by two captions of apocalyptic character: "di qua Adam e di là Eva"// "O miseria umana, di quante cose per denari ti fai servo."¹⁶⁶ The captions apparently admonish those who make use of the depicted objects and tools to obtain a profit. As noted by Vecce, this fall of objects recalls once more Burchiello's sonnets, in which things haphazardly emerge on the page with no apparent relation to one another (Figure 3-18). The burlesque character of the illustration outwardly clashes with the prophetic quality of the captions, recalling unrealistic visions evoked in late Leonardo's deluge series and his prophecies.¹⁶⁷

It is a perfect mechanical visual poem, even comprised of the signature 'lion-ardo.' In fact, a lion in flames leans on a cloud that rains objects. This signature is already recorded in Leonardo's collection of pictographs as rebus 64, enclosed in one of the paper 'shelves' of his mind. The use of a rebus in such occasion certainly does not upset those familiar with the 160

¹⁶⁶ Leonardo da Vinci, RL 12698.

¹⁶⁷ Cf. Vecce, "Parola e immagine," 31; Luporini, *La mente di Leonardo*, 28.

orderly catalogued rebuses and the many other scattered around his manuscripts. And yet, it is a striking affirmation of presence—of Leonardo hidden among his objects and mechanical tools, witnessing the caducity of things, of the arts, and of communicating in both words and images the unfathomable mystery of Nature. At the same time, a more playful meaning—*alla burchiella*—subtends this emblem. It is the revenge of the *artes mechanicae* guided by Leonardo, the king of animals (the lion) and Nature (the fire), subverting the order of things in their final judgment.

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*Se ll'aria si moverà per obliquo, o per linea equidistante,
essa ballotta farà gli effetti che seguiranno—
che qui non lo scrivo, per non avere spatio.¹*

In Manuscript E, Leonardo expresses his desire to realize a *scienza sensibile*, meaning a mathematical science able to explain natural effects as they really are, without reducing them to simple abstract terms. In order to accomplish this project, he continuously relies on the judgment of ‘observation’ and ‘experiment.’² However, we should not consider Leonardo as an empiricist opponent of theoretical science in favor of practical knowledge. As Paolo Galluzzi argued, Leonardo strived instead to create a universal science, based on few general principles from which to deduce all natural phenomena. This is what he accomplished by means of analogy.³ Leonardo’s famous assimilation of water vortices and hair masses is apparently derived from his incredible capacity for keen observation. As Ernst Gombrich noted, such analogies do not subsist on the level of perceptible experience: they are diagrammatic constructs.⁴ According to Paolo Galluzzi, Leonardo’s analogy of ‘water-air-manes’ is based on his schematization of water with lines of movement as illustrated on fol. 20r from Manuscript F (Figure 3-19).

My dissertation clarifies Gombrich and Galluzzi's assumptions and demonstrates that Leonardo's schematization of water with lines of movement is reenacted in his pictographs, and translated into the cause-effect model on which he structures his fables and emblems. This schematization is the theoretical premise to analogical perception that cannot be recorded on the observational level. The late Leonardo is conducting a theoretical effort to explain the complexity of real cases documented in experience with general principles and quantitative methods that he verified by means of various modes of investigation—including, intriguingly, fables and emblems.⁵ The logic and instantiated economy of the fable deal with imaginary figures which echo the scientific principle and the mathematical argument. Fables, emblems, and mathematics are all about diagrammatic abstraction. The diagram is being incarnated in a specific form that is replicated in the fable and in scientific thinking.⁶ In this way, discourses unrelated to one another get connected through their bidirectional influence: the abstraction is concretized, and the specific example becomes universal.⁷

In the first chapter, I argued that Leonardo collected words and images to create a visual and textual language that he developed into more complex narratives. As we have seen in my examination of words and images pertaining to the semantic sphere of water, air, and fire, Leonardo starts his investigation by collecting terms describing natural phenomena, and uses them to create pictographs that play with their letter combination, visual shape, and physical properties. In this way, he defines a synthetic idea of the water-air and fire-flames characters based

on his semantic, graphic-pictorial and empirical analysis, which is the foundation of more complex narratives, such as his fables and *facetiae*.

The main sources for the development of Leonardo's visual and textual narratives were evidently fifteenth century editions of Pliny and Aesop, both in Latin and in vernacular. Pliny is one of the first books to feature in Leonardo's library in 1480, in the vernacular edition by Christophoro Landino, published in Venice in 1476. Aesop appears on Leonardo's shelves around 1495-97, in no less than three different editions: *La vita dell'Esopo e le favole del medesimo*, curated by Francesco del Tuppo (Naples, 1485), *Les fables d'Ésope* (Lyon, 1480), and the *Aesopus moralisatus* in Latin and Italian verses by Accio Zucco (Verona, 1479). In addition, Leonardo might have owned the collection of Aesopic fables by Fazio Caffarelli, published in Cosenza in 1478.

The terrific iconographic apparatus of Pliny's and Aesop's editions that were popular during his time immensely influenced Leonardo's textual and visual compositional modes. In fashioning his fables and emblems, Leonardo reworked Aesop's and Pliny's literary style and formulaic structure, which he dramatized thanks to sources drawn from classic and contemporary poetry, such as Ovid and Burchiello. Subsequently, through the examination of natural phenomena and scientific principles, Leonardo transformed his models toward the representation of the tensions between nature and artifice, and between painting and literature.

In the second chapter, through the analysis of recurrent plant subjects in his manuscripts, I have shown evidence of Leonardo's methodic organization of fables, emblems and technical-

scientific notations on the same page. Case studies on four clusters of fables and emblems revealed that Leonardo structured his fables on a binary model that is reflected in his scientific diagrams. Leonardo employs the same model to develop his fables into emblems in order to concurrently show the causes and the effects of a situation. Leonardo's emblems, which are synthetic texts condensing written and pictorial material, are arguably the visual and textual conclusion of his investigation.

Furthermore, my survey of late sixteenth century emblem treatises demonstrated that Leonardo's main inspirational motifs for the development of emblems—such as natural elements and Aesopic fables—are documented in the emblem tradition. In addition, it became clear that emblems, arguably derived from Leonardo's fables, survived and became popular in the late sixteenth century. Intriguingly, mechanical devices and artificial tools occupy relatively little space in late Cinquecento emblem treatises, and yet they are widely employed by Leonardo in his fables and emblems.

In the third chapter, I argued that Leonardo shaped his fables around empirical observations and technical-scientific studies—pertaining, in particular, to the mechanical arts. In my reading of Leonardo's and his contemporaries' approach to the mechanical arts, I became aware of the mechanics acting on the composition of fables and emblems on multiple levels: it influenced their themes, structures, and meaning to eventually turn them into 'mechanical metaphors.' In the course of the chapter, I demonstrated that Leonardo's combination of mechanical studies and literary-artistic interpretation is not an isolated case in early modern workshops. Mariano

Taccola's drawings of machines are based on a model aimed at the simultaneous representation of causes and effects, which is reflected in Leonardo's fables and emblems. In addition, Giuliano da Sangallo's creation of sculptural reliefs illustrating fables for the Gondi Palace's staircase show a possible sculptural destination of fables in a concise emblematic form modeled on a cause-effect scheme that condenses the narration in the constrained space of a step-end.

Leonardo not only applies a cause-effect scheme to his fables, but also employs them to show the mechanical interaction of forces at the basis of every physical phenomenon. Leonardo's fables directly deal with categories derived from classical mechanical theory—such as 'force,' 'motion,' 'weight,' 'percussion'—and illustrate the functioning of wheels, pulleys and screws in applied mechanics. The same is true for his emblems, which become 'mechanical metaphors' to investigate and represent natural processes and conduct his battle toward the re-evaluation of painting and the mechanical arts.

In conclusion, fables and emblems are part of Leonardo's aesthetic and philosophical project intended for the acquisition of world knowledge. In their composition, Leonardo drew on literary-artistic traditions, natural observation, and the mechanical arts. In particular, mechanical tools are exclusive subjects for Leonardo's *imprese* catered to his patrons. Furthermore, they are the preferred method used to investigate and represent natural processes and the relationship between Nature and artifice in the form of 'mechanical metaphors.' In addition, by means of these 'mechanical metaphors' Leonardo opposes the rhetoricians and commentators of ancient texts. In fact, he turns their favorite sources back against them in order to expose the *ingenium* of the

artist-technician. By finding a diagrammatic structure in the delivery system of occult knowledge, Leonardo denies literature its special status as something that requires interpretation: he takes poetry down a notch. Ultimately, Leonardo transfers fables and emblems into other discourses because they allow him to combine abstraction and materialization for the depiction of various scenarios documented in experience. In this way, he can explain the functioning of a phenomenon (such as the cycle of water), apply and test a scientific paradigm (the cause-effect model) to different circumstances, and use the phenomenon to convey a cognitive-moral value.⁸

In his fables and emblems, the two major poles pertaining to Leonardo's investigation of nature can finally merge:

L'artista realistico (se non si dà a questo termine, oggi polemico, il contenuto di un meccanico e stupido verismo o naturalismo) che, spinto dallo stesso interesse scientifico, tende alla rappresentazione e interpretazione più concreta, la più ricca e sintetica della realtà naturale ed umana; lo scienziato sperimentale che deve astrarre da una quantità di elementi fenomenici e visivi di questa realtà, che non può rimanere neppure sul terreno dell'osservazione e del catalogo empirici, per quanto rigorosi, ma deve ridurre quei fenomeni naturali alla loro ossatura e al loro dinamismo meccanico.⁹

Leonardo artist, who strives for a truthful representation of Nature and its creatures, models his artistic enterprise according to the 'bone structure,' that is, the mechanical dynamisms at the basis of natural phenomena as investigated by the scientist.¹⁰ His empirical science concerns "la vera notizia delle cose," the announcement of things as they really are:

Legimi lettore se ti diletta di me, perchè son rarissime volte rinata al mondo. Perchè la patientia di tale professione si trova in pochi che vogliono di novo ricomporre simile cose di novo. E venite o omini a vedere i miracoli che per questi studi si scopre nella natura.¹¹

Experience as *scienza sensibile* is, according to Galluzzi, the subject of this passage.¹² It is the diligent practice of the inventor—artist and technician—that both observes and recomposes the workings of Nature in innovative literary-artistic and scientific-empirical forms.¹³ This patient work is recalled in Leonardo's fable 39, of the stone crushed by steel, and it is placed beside his preface on the mechanical arts. In that preface, Leonardo adamantly opposes the 'windbags and imitators' of ancient sources exactly because they do not rely on natural observation: this is the beginning of his insistent defense of the artist-inventor.

Furthermore, Leonardo clarifies that the art of the inventor, which is based on natural observation, is a cyclical craft. On folio 387r of the Codex Atlanticus, the same cyclic rhythm is tied to the continuous decline and rebirth of painting in his delightful condensed history of art:

Come la pittura d'età in età va declinando e perdendosi, quando i pittori non hanno per altore altri che la fatta pittura.

Come la pittura

Il pittore arà la sua pittura di poca eccellenza, se quello piglia per altore l'altrui pitture; ma s'egli imparerà dalle cose naturali, farà bono frutto, come vedemmo ne' pittori dopo i Romani, i quali sempre imitavano l'uno dall'altro e di età in età sempre andaro, detta arte, in declinazione. Dopo questi venne Giotto fiorentino, il quale ~~non stando contento a loro imitare l'opere di Cimabue suo maestro~~, non avendo nato in monti soletari, abitato solo da capre e simil bestie, questo, sendo volto dalla natura a simile arte, cominciò a disegnare su per i sassi li atti delle capre de le quali lui era guardatore, e così cominciò a fare tutti li animali che nel paese si trovava in tal modo che questo, dopo molto studio, avanzò non che i maestri della sua età, ma tutti quelli di molti secoli passati. Dopo questo l'arte ricadde. Perché tutti imitavano le fatte pitture, e così di secolo in seculo andò declinando, insino a tanto che Tomaso fiorentino, scognominato Masaccio, mostrò con opera perfetta come quegli che pigliavano per altore altro che la natura, maestra de' maestri, s'affaticavano invano.

Così voglio dire di queste cose matematiche, che quegli che solamente studiano li altori e non l'opere di natura, son per arte nipoti, non figlioli d'essa natura, maestra de' boni altori. Odi somma stoltizia di quelli i quali biasimano coloro che 'nparano da la natura lasciando stare li altori, discepoli d'essa natura.¹⁴

The movement of progression (cause) and declination (effect) at the basis of Leonardo's fables and emblems is here beautifully repropounded as a model for historical interpretation. As suggested in the text conclusion, in every epoch each field of knowledge—painting and literature, mechanics and mathematics—should be based on direct experience of the natural world. Apparently, Leonardo invites all knowledges to take part into his *scienza sensibile*, and to collaborate to create an honest representation of the ever-changing nature.

Leonardo's embodied reworking of images and words throughout time demands reflection on the chronology of his works from a historiographical perspective and on the theoretical nexus between disciplines in relation to modern thought.¹⁵ His appeal for the unity of knowledges and the collaboration of different fields of analysis is indeed relevant to current word-and-image debate and interdisciplinary research in the digital humanities. According to Robert Zwijnenberg and Claire Farago, an art historical enterprise should be guided by what is actually seen, touched, and experienced when confronted with a "historical" work of art. Scholarly focus should not be the work's provenance, the artists' and patrons' intentions, the physical setting in which a given work was formerly displayed, but the significance or value of the work of art to us:

The work of art and the successive generations of interpreters exist in the same dynamic flow of time. Therefore, the form of the interpretation—its method and style of presentation—must be suited to these circumstances. It follows that a deductive method, a *mathesis universalis*, is not appropriate. The most important consequence of acknowledging our contingent position as viewing subjects (and it is the central thesis of this volume) is that the interpretation of a work of art, which is by definition a concrete, individual object, requires a *mathesis particularis*. This means that the choice of theoretical instruments and the vocabulary of interpretation are more or less (or as far as possible) motivated by the work of art.¹⁶

What does it mean to consider Leonardo's account of history of art (and science) in present-day visual culture? To what extent can early modern sources be identified in light of modern technology? Can digital humanities help us to unveil early modern textual and visual combinatory devices? By coming to its conclusion, this study has indeed paved the way in multiple new directions.

We do not know the final purpose of Leonardo's text on the cyclicity of painting—which is poorly compressed on an oblong paper clipping. Nor did we know the function of most parts of the words and images up until it was here discussed. This is the reason why I mainly avoided political interpretations. My belief is that they might have remained externally assigned, without solving the problem behind Leonardo's multiple modes of combining textual and visual signs. As it gradually emerges in the reading of this work, few signs revealed to be the foundation of grand aesthetic and philosophical projects for the depiction of the world, and some others show instead fragile and intimate reflections on Leonardo's personal condition. There are satirical jokes against humanistic culture and proclamations of the nobility of Leonardo-inventor which probably never reached their recipient. They remain silent testimonies of the artist's rebellion against unknown injustices and, ultimately, of his isolation.

Digital humanities initiatives offer the possibility to examine, handle, and recombine Leonardo's numerous, inconclusive paper testimonies, according to both form and content, in order to retrace the various paths of their development. Jean Paul Richter's reorganization and master edition of Leonardo's codices in 1883 not only signified the unique opportunity to broadly

access these outstanding resources, but also stimulated modern advancements in image reproduction.¹⁷ Leonardo's earlier editions of manuscripts correspond, in fact, with the first prototype editions in the history of publishing. Between 1881 and 1891 we have the Paris edition of the Institut the France manuscripts, curated by Charles Ravaisson-Mollien, then the edition of the Codex Trivulzianus (1881), the Codex of the Bird's Flight (1893), the Codex Atlanticus (1894-1904), the Windsor sheets (1898-1901) and the Codex Leicester (1909).

Leonardo himself was aware of the power of printing that was spreading at his time and, even if he criticized the devaluation of the work of art's uniqueness derived by its reproduction, he probably planned to print his works at some point.¹⁸ The quality and quantity of Leonardo's folios was not only enhanced through innovative material modes of reproduction, but also questioned the digital world. Since the foundation of the e-Leo database,¹⁹ multiple digital initiatives arose with the aim to broaden access to this multifarious material and to contribute to academic research in Leonardo studies. The digital project "LILeo," which combines historical needs in the visual analysis of manuscripts with the most recent trends in the digital humanities, is situated within this framework.²⁰

Thanks to digital inquiry, we could easily rotate the dubious drawing of a 'gown' of 180 degrees and place it side by side a schematic drawing on the *verso* of the same *folio* to reveal it to be the life drawing of a lily. Subsequently, this image would summon another undefined sketch (the 'burning insect' found on folio RL 12,700), which in turn would recall the image of a *mandorla* (an almond-shaped framing device) showing Jupiter in flames from Leonardo's designs for

Baldassarre Taccone's *Danaë*.²¹ Because this *mandorla* appears on the same page of the refined *cameo* of the lizard, it is easy to speculate that the *cameo* was designed for one of *Danaë*'s theatrical costumes, as Bambach confirms. Perhaps it is precisely the costume for Sirius (King Acrisius's faithful servant), interpreted by Taccone.²² The *cameo* with the pen and the ink discussed in our introduction, identified by Vecce as Baldassarre's emblem, might have been featured on his other costume of the *annunciatore della festa*—that is, the poet, Baldassarre playing the role of himself. With the list of the *Danaë*'s characters digitally in hand, which is orderly outlined on the *verso* of the lizard *folio*, we could try to identify the cameos devoted to other *Danaë* characters in Leonardo's emblems of the lily, etc. These speculations—which indeed are far from confirmed—would, ironically, suggest the practical function of Leonardo's *imprese* (Figure 3-20).

However, I believe I was able to show the extraordinary possibilities behind the simple digital juxtaposition of images. From this perspective, even if we cannot link Leonardo's sketches to his public masterpieces, we are able to trace the formal patterns of his analytical thinking, which is perhaps of more interest to us; for instance, his schematization of water with lines of movement—throughout his various textual and visual projects, ideas, and to-do lists. The digital juxtaposition, layering, and diagrammatic annotation of Leonardo's works and sources reveal vectors of movement and repeated signs across different materials. This suggests that formal configurations can move from image to text, and pertains to the study of the work of art in progress, rather than focusing the final outcome.²³

¹ Leonardo da Vinci, Cod. Mad. I, fol. 58v. "If the air moves obliquely or crosses from the side, the ball will

have the following effects—I am unable, however, to write them down here because the space is lacking.” Transl. Zwijnenberg, *The Writings and Drawings*, 100.

² Leonardo mentions the term *scienza sensibile* on fol. 54r from Manuscript E: “Per dare vera scienza del moto delli uccelli in fra l’aria è necessario dare prima la scienza de’ venti, la qual proverem mediante li moti dell’acqua in se medesima, e questa scienza sensibile farà di sé scala a pervenire alla cognizione de’ volatile in fra l’aria e l’vento.” Exemplary of Leonardo’s notion of ‘observation’ and ‘experiment’ is this folio 417r from the Codex Atlanticus, dated to 1508-10: “La sperienza non falla mai, ma sol fallano i vostri giudizi promettendosi di quella effetto tale, che in e nostri esperimenti causati non sono.” Cf. Galluzzi, *Leonardo e i proporzionanti*, 18, 24, 26-28; Gerolamo Calvi, “Osservazione, invenzione, esperienza in Leonardo da Vinci,” in *Per il Quarto Centenario della morte di Leonardo da Vinci* (Bergamo: Istituto Italiano d’Arti Grafiche, 1919), 323-53.

³ On Leonardo’s analogical method, see Nova, “Valori e limiti del metodo analogico nell’opera di Leonardo da Vinci,” in *Leonardo da Vinci: Metodi e tecniche per la conoscenza*, Marani and Maffei, eds., 25-36. For a history of analogical thinking, see Michel Foucault, *Le parole e le cose. Un’archeologia delle scienze umane* (Milan: Rizzoli, 2013).

⁴ Gombrich, “The Form of Movement in Water and Air,” 131-204.

⁵ Galluzzi, *Leonardo e proporzionanti*, 26-28.

⁶ On the notion of ‘diagram,’ see Felix Thürlemann, “Jenseits der Opposition von Text und Bild: Überlegungen zu einer Theorie des Diagramms und des Diagrammatischen.” *Die Bildwelt der Diagramme Joachims von Fiore*, Alexander Patschovsky, ed. (Ostfildern: Thorbecke, 2003), 1-22.

⁷ According to Fabio Frosini, Leonardo’s literary writings—and, particularly, his fables—accurately depict the mutual relationship between science and life. Leonardo uses the theme of carnivalesque inversion, which is typical of the novella tradition. This is based on Nature’s punishment of those who demonstrate bad conduct. Therefore, fables and *facetiae* assume a moral-therapeutic function in suggesting the abandonment of egoistical plans and the contemplation of a universal life: “Si scontrano qui due esigenze, che la forma letteraria aiuta a pensare nella loro reciproca implicazione: da una parte la verità naturale, dall’altra l’esigenza umana di fissare distinzioni; o se si vuole, con una terminologia posteriore, la *scienza* e la *vita*. Leonardo si è dibattuto a lungo tra queste due opposte esigenze: indovinelli, facezie, favole possono essere interpretate come un grande laboratorio, in cui esse vengono bilanciate e svolte nelle loro reciproche relazioni. E infatti soprattutto nelle favole, e in parte anche nei testi scientifici più scopertamente critici, Leonardo utilizza ampiamente il tema della inversione carnevalesca, che era patrimonio comune della novellistica incentrata sulla beffa e sull’idea della vendetta della natura rispetto ai comportamenti egoistici (e si ricordi la frase: ‘perchè pare che la natura si vendichi con quelli che voglia far miraculi’). La facezia assume così una funzione terapeutica, l’inversione che ha luogo in essa dimostra che è necessario abbandonare ‘il troppo ristretto calcolo individuale’ e sollevarsi alla ‘vita universale’.” Fabio Frosini, “Mistioni e termini, ovvero dell’accidentale in natura, in *Leonardo da Vinci on Nature*, Frosini and Nova, eds., 135. Cf. also Luporini, *La mente di Leonardo*, 27.

⁸ This interpretation can be aligned to Alessandro Nova’s discussion of Leonardo’s analogical method. Nova distinguishes among three uses of analogy in Leonardo’s output: literal analogy (explanation of the functioning of a phenomenon); euristic analogy (the employment of a model, such as mechanics, or

optics); metaphorical analogy (related to a cognitive value). Cf. Nova, "Valori e limiti del metodo analogico nell'opera di Leonardo da Vinci," in *Leonardo da Vinci: Metodi e tecniche per la conoscenza*, Marani and Maffei, eds., 25-36.

⁹ Luporini, *La mente di Leonardo*, 13.

¹⁰ Ibid., 23.

¹¹ Leonardo da Vinci, Cod. Mad. I, fol. 6r.

¹² Galluzzi, *Leonardo e proporzionanti*, 28.

¹³ Again, on Codex Atlanticus, fol. 327v, Leonardo noted: "Le mie cose essere nate sotto la semplice e mera esperienza," and on fol. 520r: "Corpo nato dalla prospettiva di Leonardo da Vinci, discepolo della esperienza."

¹⁴ Leonardo da Vinci, Cod. Atl., fol. 387r.

¹⁵ Cf. Fabio Frosini, "Leonardo e le arti meccaniche. Romano Nanni studioso di Leonardo da Vinci," *Giornale Critico della Filosofia Italiana* 94, no. 3 (2016): 636-47, 637.

¹⁶ As Zwijnenberg and Farago state, scholarly interpretation is necessarily entangled with personal (bodily and intellectually) involvement with the work of art. Cf. Robert Zwijnenberg and Claire Farago, "Art History after Aesthetics: A Provocative Introduction," in *Compelling Visuality: The Work of Art in and out of History*, Robert Zwijnenberg and Claire Farago, eds. (Minneapolis, Minnesota: University of Minnesota Press, 2003), vii-ix, xiv. According to Farago, in order to develop a thorough art historical analysis it is necessary to understand how the object frames historical beholders' experience of it. Subsequently, we have to move to the nature of the investigator's experience and, finally, consider other forms of evidence besides the text. Because the same art object occupies both present and past worlds, we should take into account our affective response to the work of art: "It is our contention that, to do justice to the differences between individual works of art, we need to consider our present-day personal responses to them rigorously." Cf. Claire Farago, *Aesthetics before Art: Leonardo through the Looking Glass*, in *Compelling Visuality*, Zwijnenberg and Farago, eds., 45, 48.

¹⁷ Vecce, *La biblioteca perduta*, 16.

¹⁸ Ibid., 42.

¹⁹ "e-Leo: Archivio digitale di storia della tecnica e della scienza," Biblioteca Leonardiana, accessed February 17, 2018, <http://www.leonardodigitale.com/>.

²⁰ See "LILeo," LILeo Project, accessed February 17, 2018, <https://blogs.libraries.rutgers.edu/lileo/>.

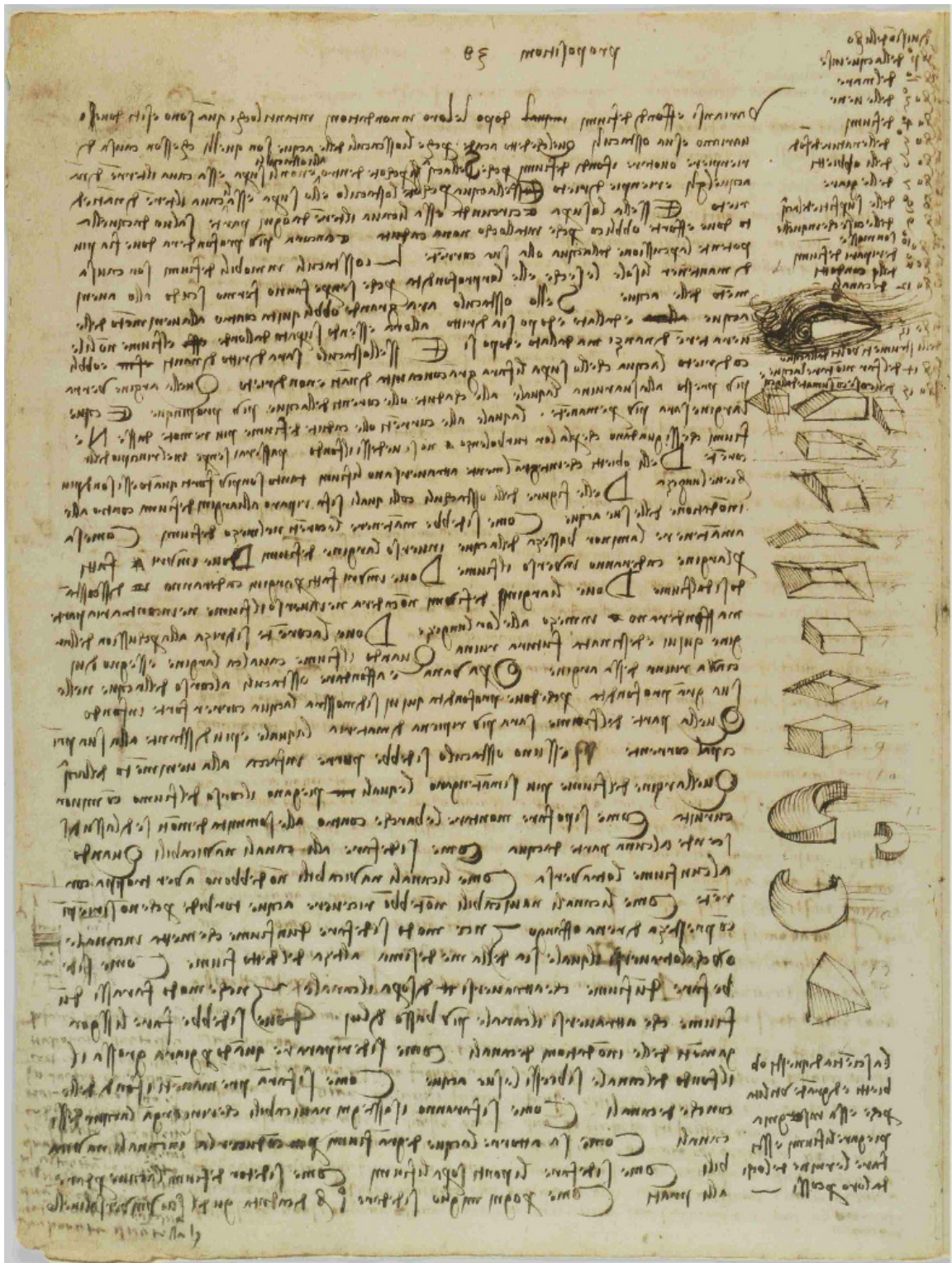
²¹ See my analysis of the fable and the emblem of the lily, Chapter Two, paragraph 2.1.1.

²² Kemp, *The Marvellous Works*, 153-54. For a discussion of the emblem of the lizard, see Chapter Two, paragraph 3.1.3.

²³ In commenting on Leonardo's manuscripts, Carlo Emilio Gadda observed: "L'appunto di Leonardo è 'una cosa seria:' tale almeno ci appare nell'intento, dalla faticata pagina, e dalla immensità dei codici. Un ghiribizzone da manicomio non dura tutta la vita a raccogliere, a commentare, ad esprimere, con una tale pazienza imperterrita, con così acre lucidità. Leonardo appunta e disegna [...]. L'affermazione suscita

d'un subito come esorcismo le vedute indelebili; e ci ammalia quella brevità sicura del detto, e il preciso contorno della reminiscenza, la libera configurazione della frase: o il rimando d'un giudizio-cristallo sui raganteli delle idee e delle formulazioni consuete. Vivida, come folgore, è scaturita l'immagine, dall'accumulo nubiloso dei pensieri." Carlo Emilio Gadda, "La mostra leonardesca di Milano," *Nuova Antologia* 407 (1939): 82. Intriguingly, it is the dimension of the writer—which is only apparently secondary to his celebrated grand artistic achievements—to mediate Leonardo's reception in present-day culture. The digital examination of active modern responses to Leonardo's visuality—by artists and writers in particular, such as Gadda—would allow us to move backward in the reconstruction of a timeless creative process from fable to emblem. In Gadda's fables, the transfer from verbal to visual inscriptions verifies uninterruptedly, in a translation process that preserves the same register of communication. Cf. Carlo Emilio Gadda, *Il primo libro delle favole* (1952, repr. Milan: Mondadori, 1990); Carlo Emilio Gadda "Materiali per la 'Mostra Leonardesca:' postille alla 'Guida Ufficiale,' appunti e abbozzo autografo del saggio," Carlo Vecce, ed., *I Quaderni dell'Ingegnere. Testi e studi gaddiani* 5 (2014): 34-91, 191-198, 201-221.

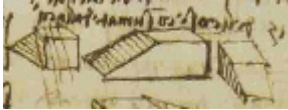
Plates



1-1. Leonardo da Vinci, Divisions of the Book on Water. Codex Leicester, fol. 15v. c. 1508-10. Collection of Bill and Melinda Gates, Seattle.



Book 1 on water in itself



Book 2 on the sea

Book 3 on underground streams

Book 4 on rivers



Book 5 on the nature of the ditches



Book 6 on objects



Book 7 on gravels



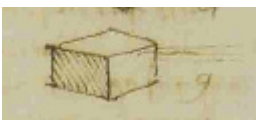
Book 8 on the surface of water



Book 9 on the things placed therein



Book 10 on riverbanks



Book 11 on conduits



Book 12 on canals

Book 13 on machines turned by water



Book 14 on raising water



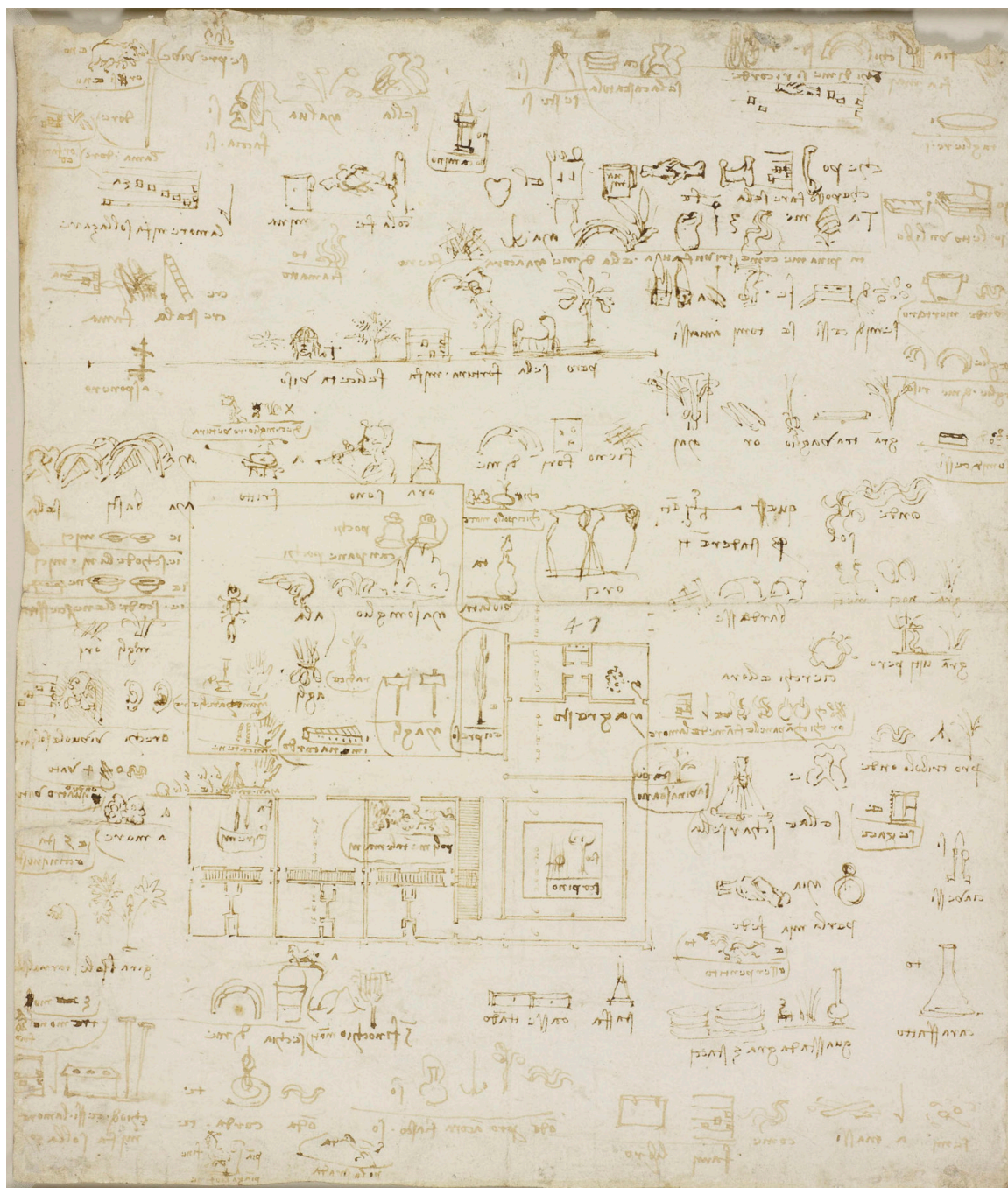
Book 15 on things worn away by water



1-3. Leonardo da Vinci, Word-and-image library sources. Codex Trivulzianus, fol. 1v. c. 1488-90. Biblioteca Trivulziana, Milan.



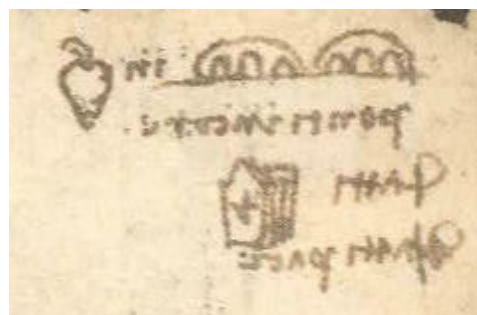
1-4. Leonardo da Vinci, Pictographs. RL 12,692v. 1487-90. Royal Collection of Windsor, Berkshire.



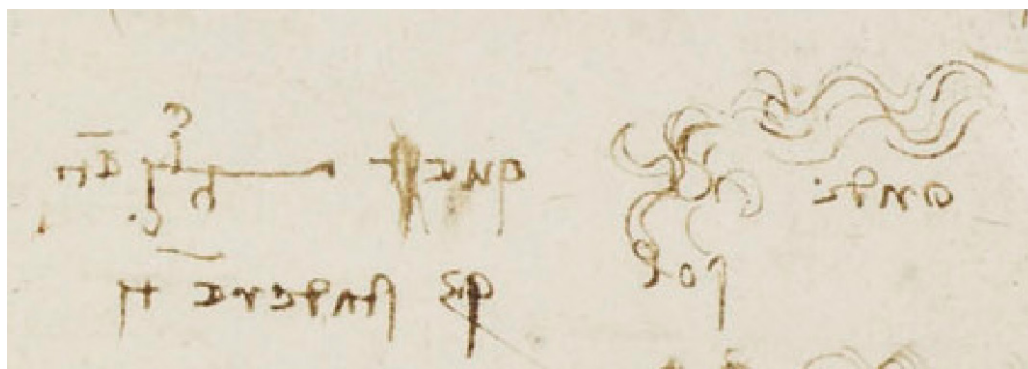
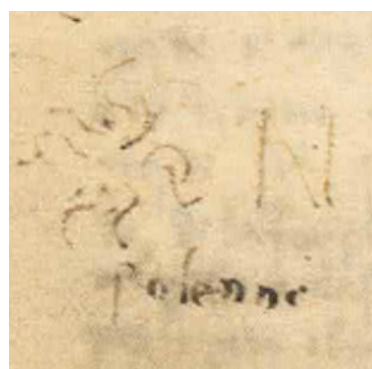
1-5. Leonardo da Vinci, Pictographs. RL 12,692r. 1487-90. Royal Collection of Windsor, Berkshire.



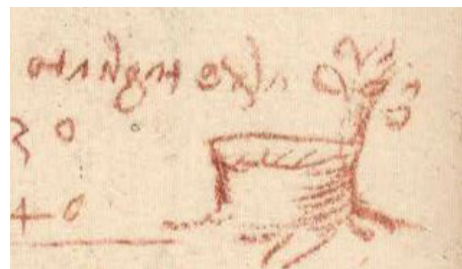
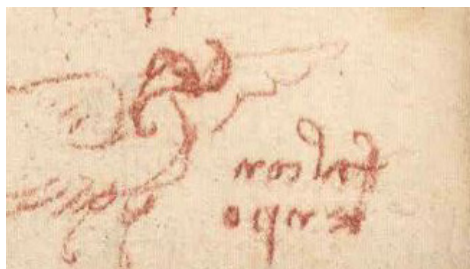
1-6. Leonardo da Vinci, "Solenne." Manuscript M, fol. 94v. 1498-99. Bibliothèque de l'Institut de France, Paris.



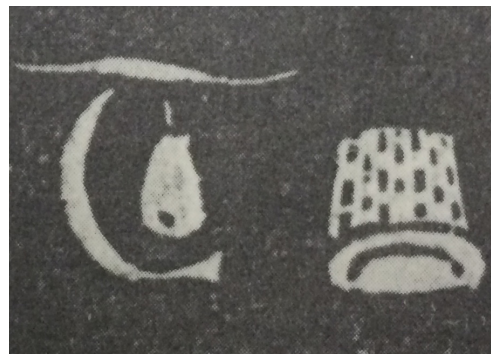
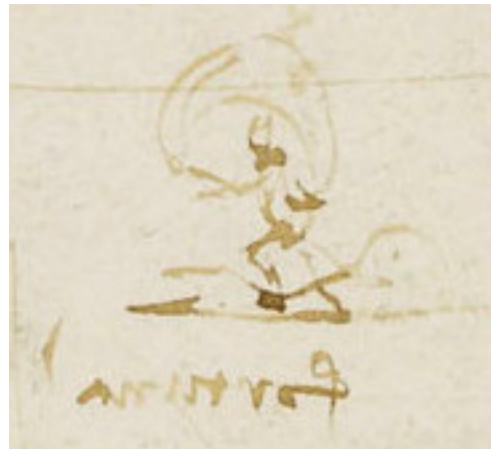
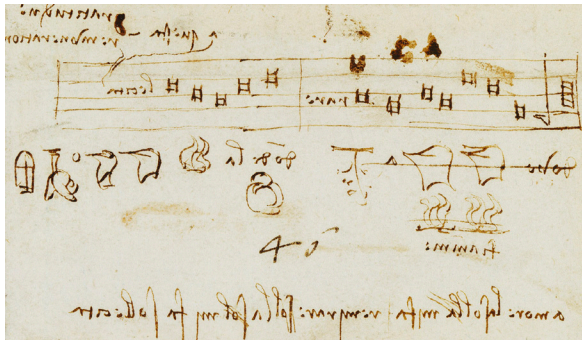
1-8. Leonardo da Vinci, "Ponti'n cuore,"
"Datti pace." RL 12,692v. 1487-90. Royal
Collection of Windsor, Berkshire.



1-7. Leonardo da Vinci, "Onde sol." RL 12,692v. 1487-90. Royal Collection of Windsor, Berkshire.

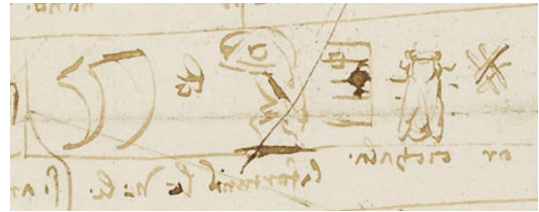
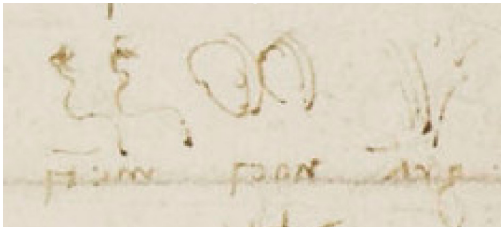
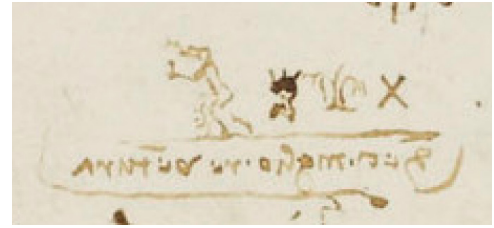
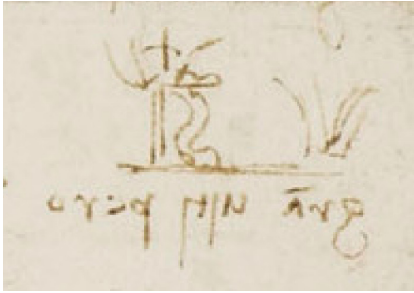


1-9. Leonardo da Vinci, "Fal con tempo," "Ancora spero." Codex Forster II, fol. 63r. 1494-97.
Victoria and Albert Museum, London.

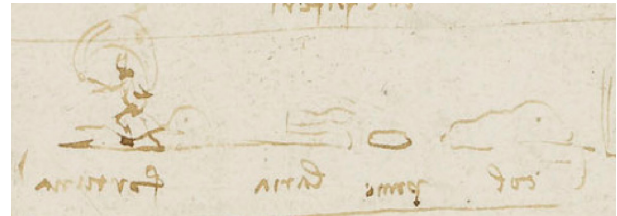
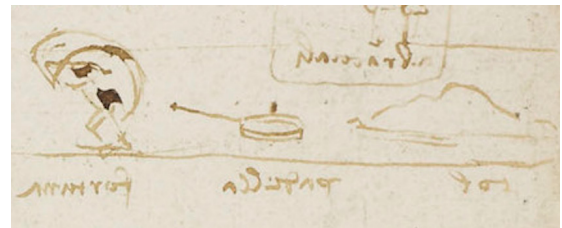
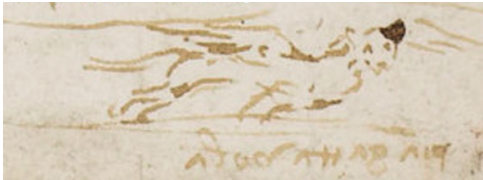


1-10. Leonardo da Vinci, "L' amor mi fa sollazzare," "opera." RL 12,692v. 1487-90. Royal Collection of Windsor, Berkshire. Comparison of Leonardo's pictographs with Alione's and Tibaldo's rebuses on pears, manes, and musical notes.





1-11. Leonardo da Vinci, "Gran vituperio," "Gran nocimenti." RL 12,692v. 1487-90. Royal Collection of Windsor, Berkshire.



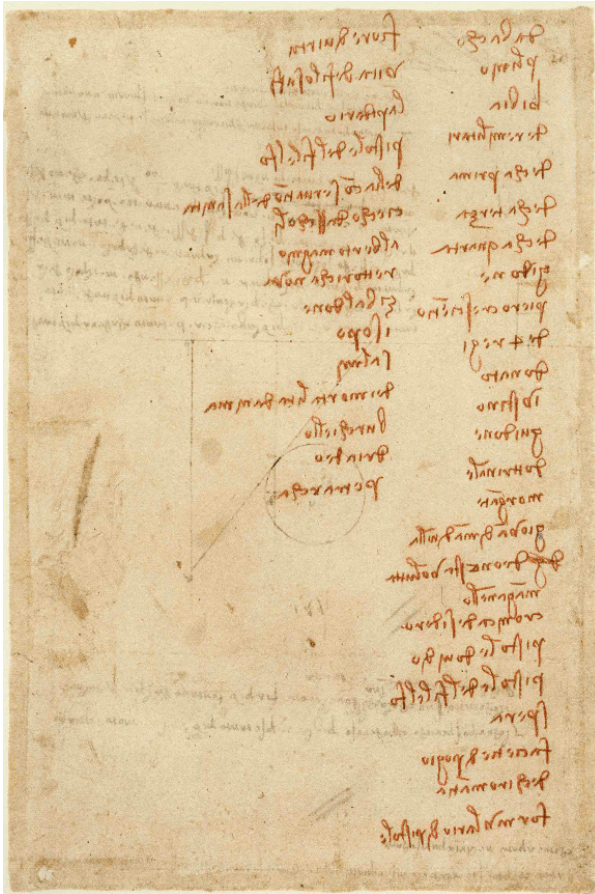
1-12. Leonardo da Vinci, "Piangattavola," "Lionardeschi." RL 12,692v. 1487-90. Royal Collection of Windsor, Berkshire.



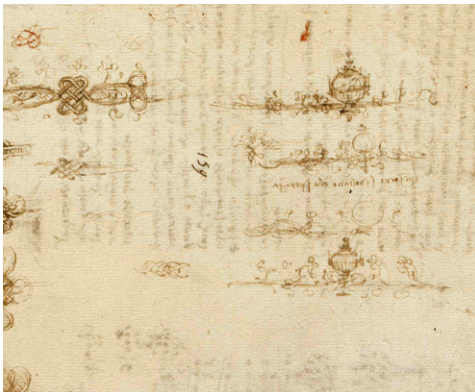
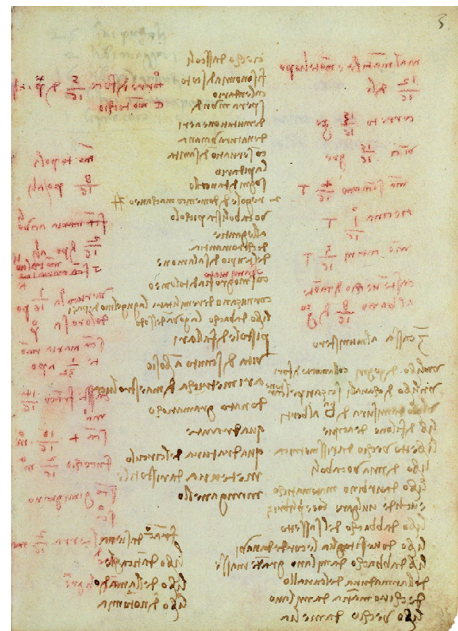
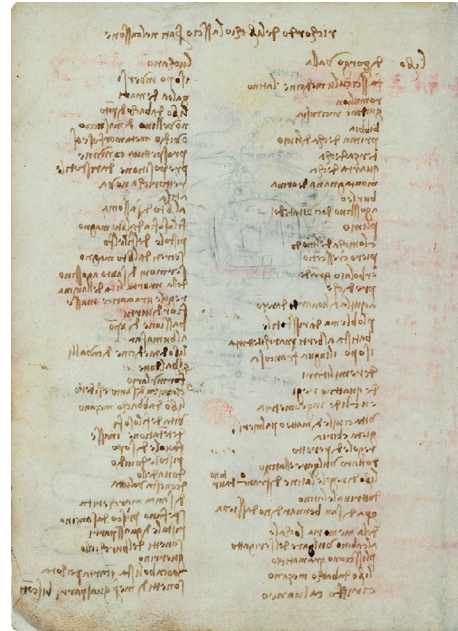
1-13. Leonardo da Vinci, "Diecci migliore ventura," "Or ci cala la fortuna le vele," "Colpa della fortuna," "Colpa nè la rea fortuna," "Però se la fortuna mi fa felice tal viso asponerò." RL 12,692v. 1487-90. Royal Collection of Windsor, Berkshire.

1-14. Leonardo da Vinci, Series of smokes. Codex Trivulzianus, fol. 11v. c. 1488-90. Biblioteca Trivulziana, Milan.





1-15. Leonardo da Vinci, List of books. Codex Atlanticus. fol. 559r,
c. 1495-97. Veneranda Biblioteca Ambrosiana, Milan;
List of Books. Codex Madrid II. fol. 2v, 3r, c. 1503.
Biblioteca Nacional de España, Madrid.



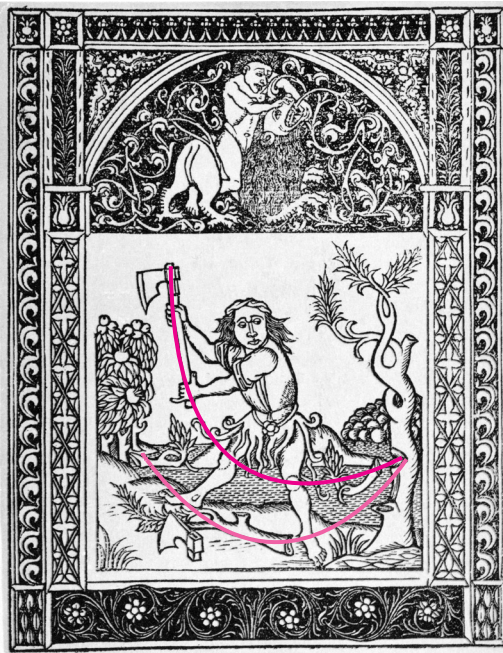
1-16. Leonardo da Vinci, Political Allegory.
RL 12,496r, 1495. Royal Collection
of Windsor, Berkshire.

1-17. Calandrino. Codex Atlanticus. fol. 190v,
c. 1503. Veneranda Biblioteca
Ambrosiana, Milan.





1-18. Del Tупpo, The Axe and the Tree. Aesopus, 1485. British Library, London.



1-19. Analysis of recurrent patterns. Del Tупpo, The
Axe and the Tree. Aesopus, 1485.
British Library, London;

Leonardo da Vinci, Figures in Action.
RL 12,644 r, c. 1506-1508.
Royal Collection of Windsor, Berkshire.



1-20 Analysis of recurrent patterns. Leonardo da
Vinci, Figures in Action, details. RL 12,644 r, c. 1506-
1508. Royal Collection of Windsor, Berkshire.

1-21. Leonardo da Vinci,
Figures in Action.
RL 12,644 v,
c. 1506-1508.
Royal Collection of Windsor,
Berkshire.

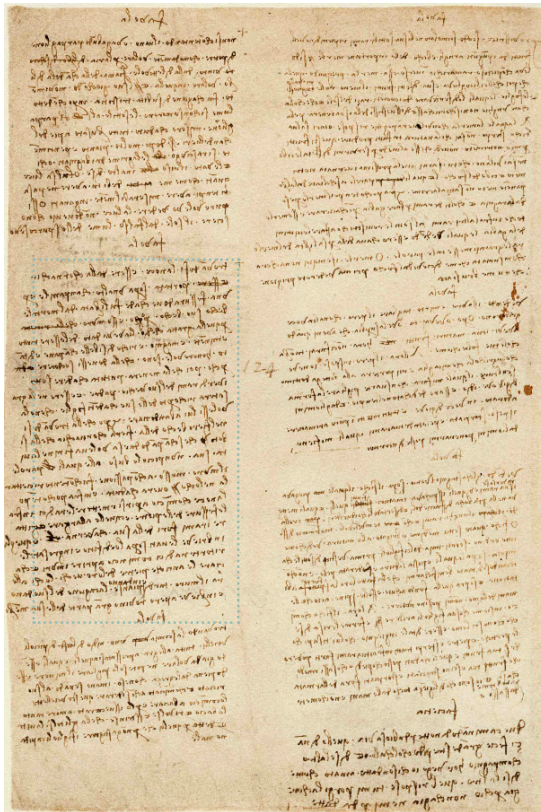


1-22. Analysis of recurrent patterns.
Leonardo da Vinci, Figures in Action. RL
12,644 r-v, c. 1506-1508. Royal Collection
of Windsor, Berkshire.



1-23. Analysis of recurrent patterns. Leonardo da Vinci, *Figures in Action*. RL 12,644 r-v; RL 12,645 r-v; RL 12,646 r-v. c. 1506-1508. Royal Collection of Windsor, Berkshire.

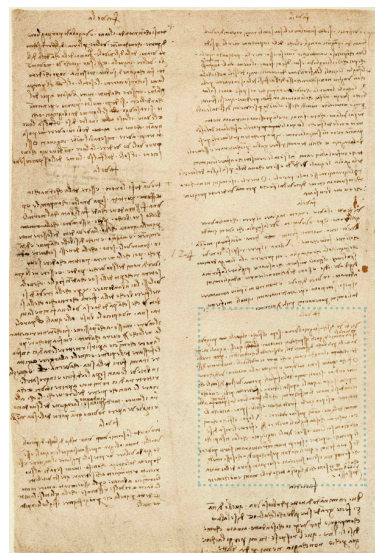




1-25. Leonardo da Vinci, The fable of the chestnut and the fig tree. Codex Atlanticus. fol. 187 r, c. 1495-1497. Veneranda Biblioteca Ambrosiana, Milan.

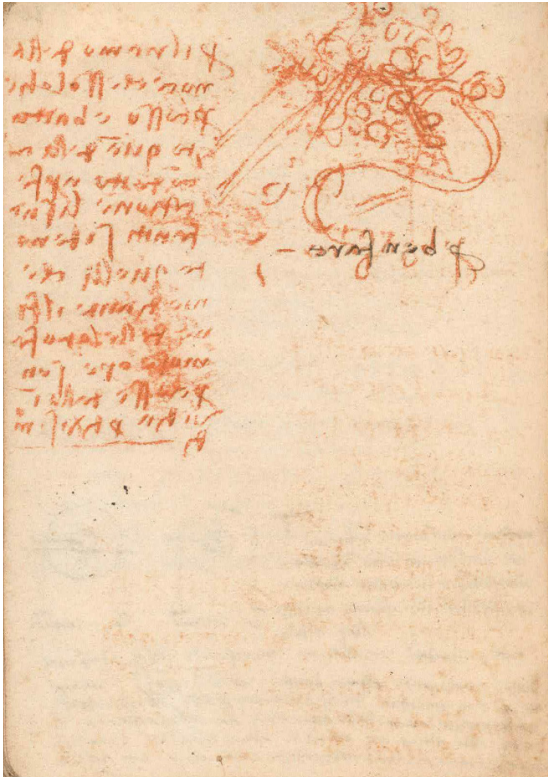


1-26. Leonardo da Vinci, The fable of the nut tree. Codex Atlanticus. fol. 207 r, c. 1495-1497. Veneranda Biblioteca Ambrosiana, Milan.



1-27. Leonardo da Vinci, The fable of the nut and the bell tower. Codex Atlanticus. fol. 187 r, c. 1495-1497. Veneranda Biblioteca Ambrosiana, Milan.

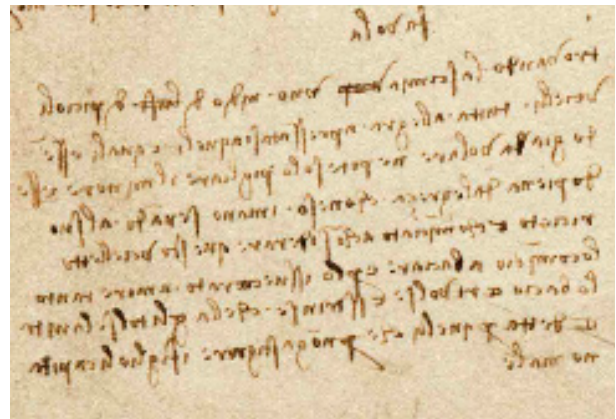
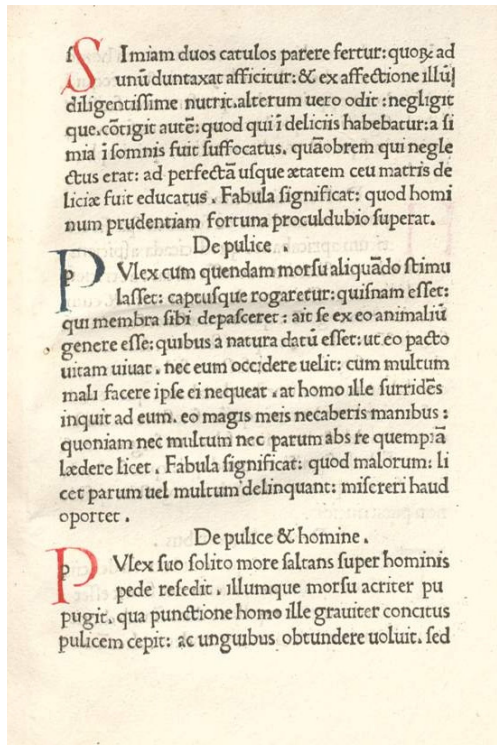
1-28. Leonardo da Vinci, Prophecy of the nut. Codex Atlanticus. fol. 393 r, c. 1495-1497. Veneranda Biblioteca Ambrosiana, Milan.



1-29. Leonardo da Vinci, Emblem of the nut.
Manuscript G, fol. 88 v, c. 1495-1497.
Institut de France, Paris;

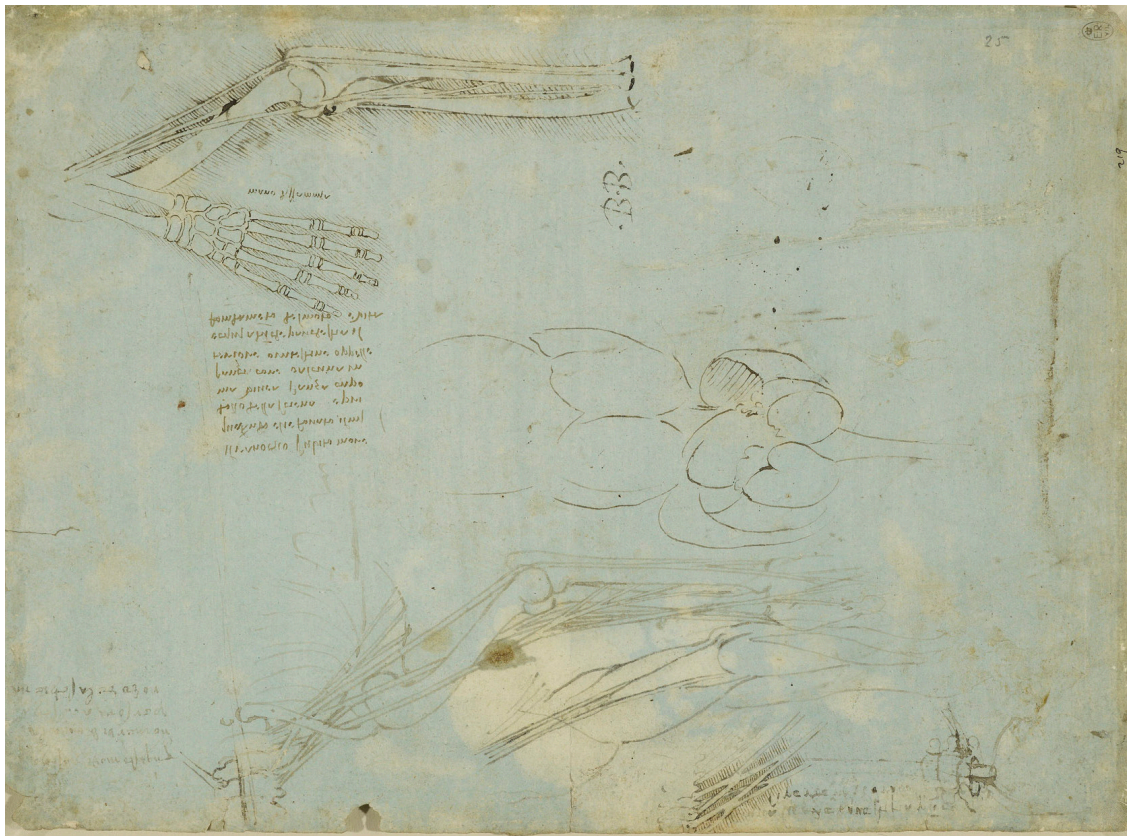
Leonardo da Vinci, Allegory of Joy and Sorrow.
A 29, c. 1483-1485. Oxford Christ Church,
Oxford.

1-30. Leonardo da Vinci, Botanical drawings.
RL 12,422r, c. 1505-1510.
Royal Collection of Windsor, Berkshire.

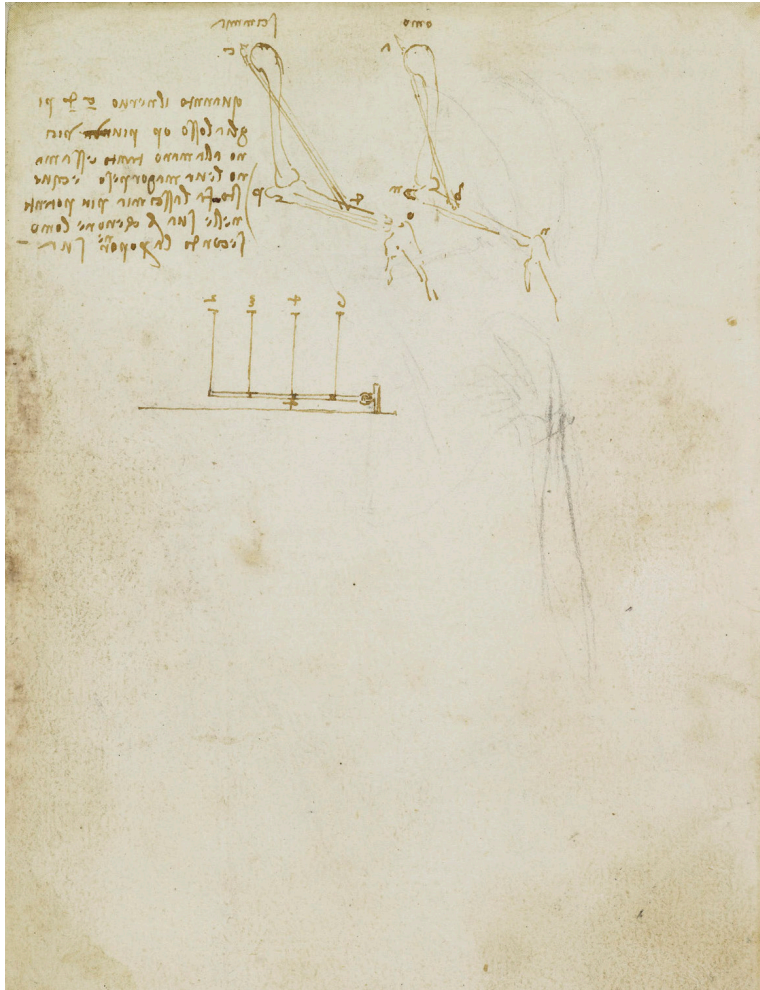


1-31. De Simia. Vita et fabulae Esopi per Rimicium latinae factae. Tr: Rinucius. Milan: Gasparus de Cantono, 9 Nov. 1480. Bibliothèque nationale de France, Paris.

Leonardo da Vinci, The fable of the monkey and the bird. Codex Atlanticus, fol. 187r, c. 1490. Veneranda Biblioteca Ambrosiana, Milan.

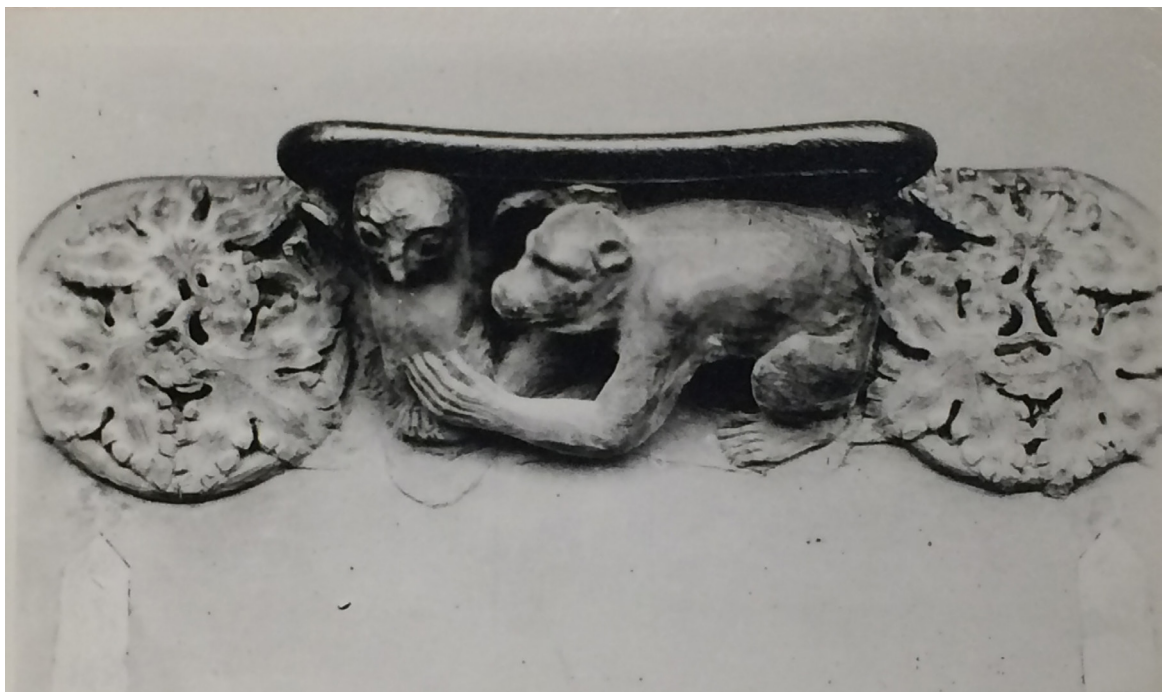


1-32. Leonardo da Vinci, Study of the monkey's hand. RL 12'613r, c. 1485-1490. Royal Collection of Windsor, Berkshire.



1-33. Leonardo da Vinci, Study of the monkey's arm. RL 19,026v, c. 1508. Royal Collection of Windsor, Berkshire.

1-34. Anonymous, The monkey and the bird. cat. Animal Fables. Warburg Institute, London.





1-35. Table of digital visual juxtapositions. Leonardo's studies of the monkey's arm and hand (a-b), and illustrations from XIV century Aesopic collections of fables:

(c) Untitled. Warburg Institute, London;
 (d) Aesop, *Animal Fables*, untitled. 1480. Warburg Institute, London;
 (e) Aesop, *The Dog and the Sheep*, fab. 5. Francesco Del Tупpo, *La vita dell'Esopo e le favole del medesimo* (Naples, 1485). Inc. Y689. Bibliothèque Nationale de France, Paris;
 (f) Francesco Del Tупpo, *La vita dell'Esopo e le favole del medesimo* (Naples, 1485). Inc. GW00411. Library of Congress, Washington;

(g) Aesop, *Animal Fables*, untitled. 1480. Warburg Institute, London;

(h) Aesop, *The Monkey and its Sons*. Julien des Augustinus, *Les Fables* (Lyon, 1484). Inc. 698. Bibliothèque Nationale de France, Paris;

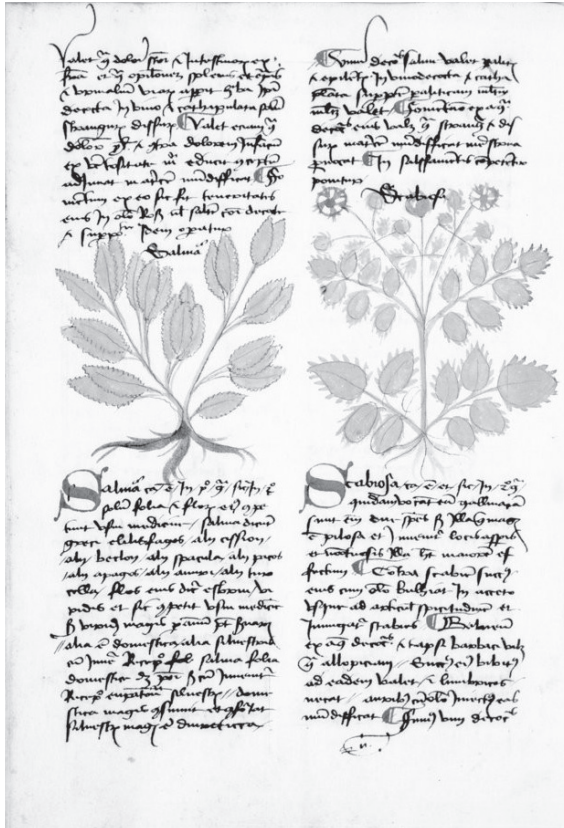
(i) Aesop, *The Monkey and its Children*. Julien des Augustinus, *Les Fables* (Lyon, 1484). Inc. 392. Bibliothèque Nationale de France, Paris.



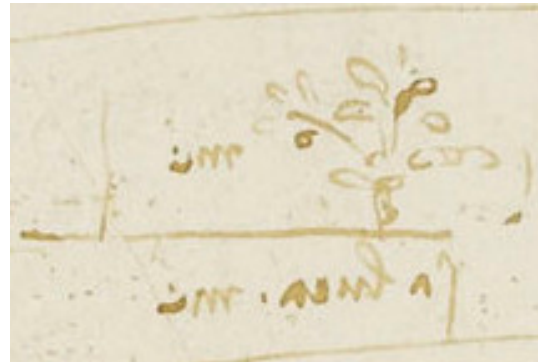
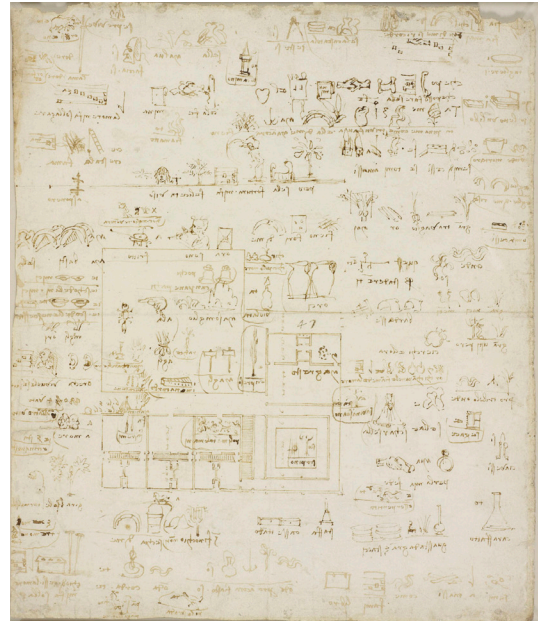
2-1. Francesco Gonzaga, Sage. Herbarium Apuleii Platonici. c. 1481-82. Inc. s.a.179. Münchener DigitalisierungsZentrum, München; Herbarius Pataviae. Sage. c. [14]85. Inc. c.a.412. Münchener DigitalisierungsZentrum, München;
 "Salvia." Petrus Schoeffer, Herbarius Maguntiae. c. 1484. Inc. c.a.364m. Münchener DigitalisierungsZentrum, München.



2-2. Leonardo da Vinci, Sage. Codex Atlanticus. fol. 197r-v, c. 1507. Veneranda Biblioteca Ambrosiana, Milan.



2-3. Tractatus Herbarum Dioscoridis, Platonis et Galeni.
Sage. c. 1501. Inc. btvlb9077902b. Bibliothèque
Nationale de France, Paris.



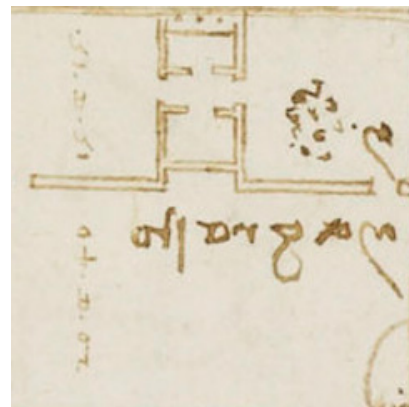
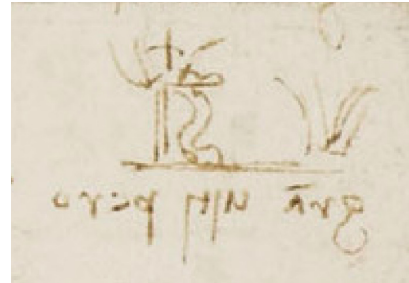
2-4. Leonardo da Vinci, "Salvia me." RL 12,692v, 1487-90.
Royal Collection of Windsor, Berkshire.



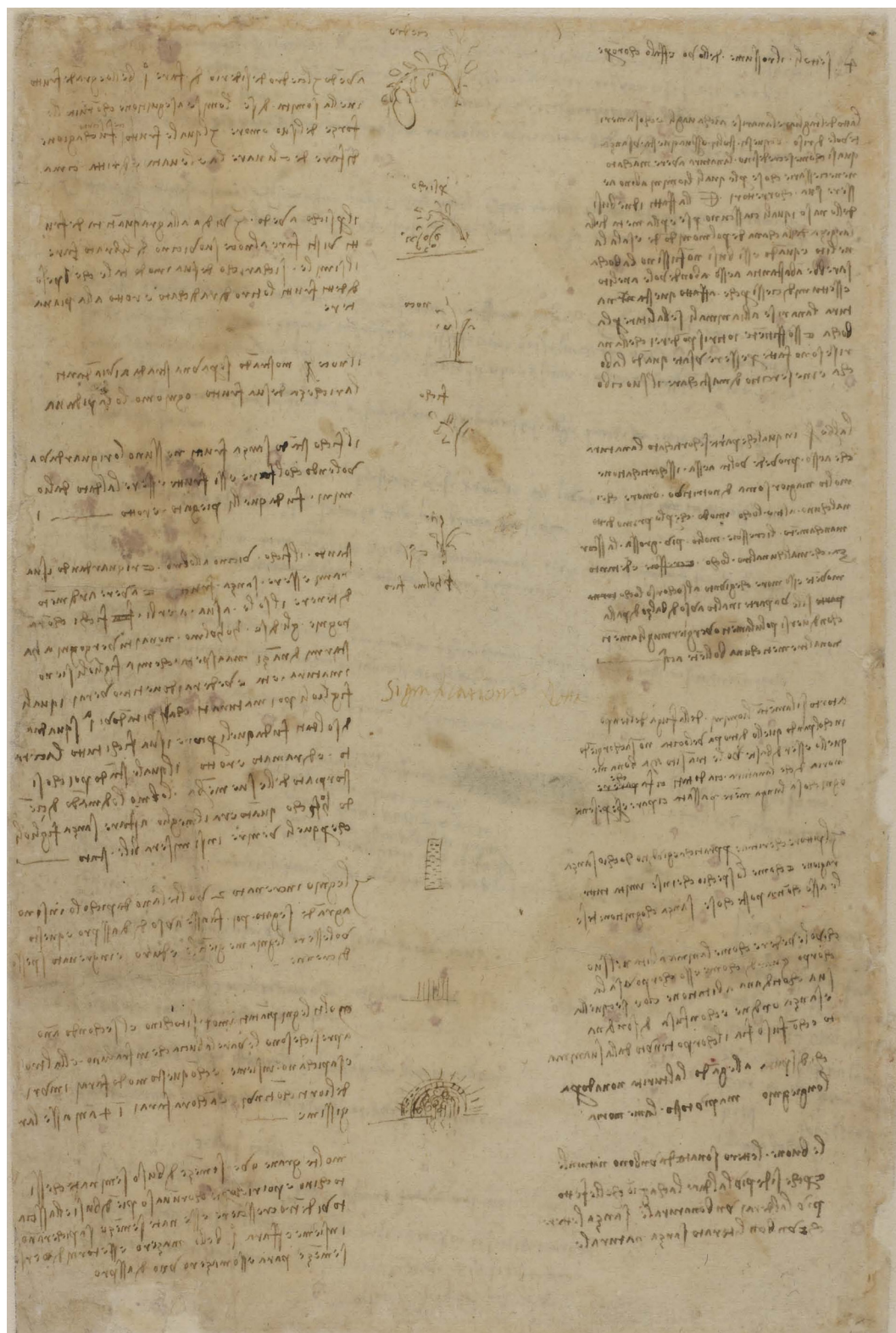
2-5. Leonardo da Vinci, Sage.
Codex Atlanticus. fol. 197r-v,
c. 1507. Veneranda Biblioteca
Ambrosiana, Milan;
Erbario. Salvia. fol. 99v.
Late 15th century. Lawrence J.
Schoenberg Collection,
Longboat Key, Florida.



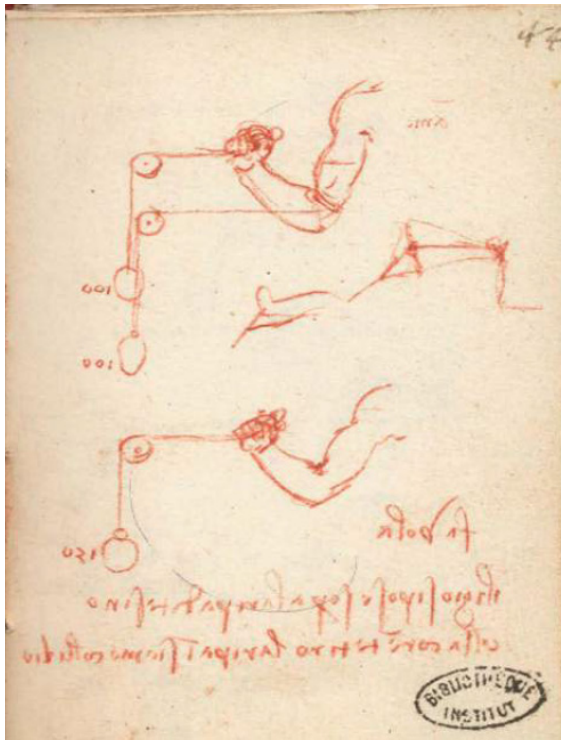
2-6. Leonardo da Vinci, Grapes. Codex Atlanticus. fol. 317v, c. 1518. Veneranda Biblioteca Ambrosiana, Milan; "La vigna." Carrara Herbal. Ms. 2020. fol. 28r, c. 1390-1404. British Library, London.



2-7. Leonardo da Vinci, Grapes. Codex Atlanticus. fol. 317v, c. 1518. Veneranda Biblioteca Ambrosiana, Milan; Leonardo da Vinci, Grapes' rebuses. RL 12,692v, 1487-90. Royal Collection of Windsor, Berkshire.



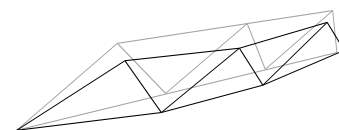
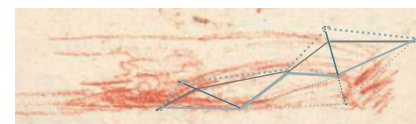
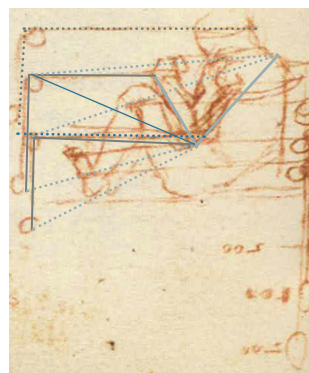
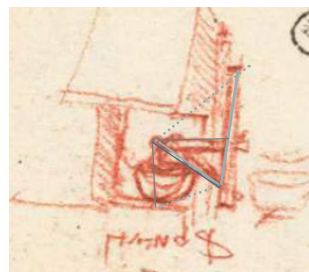
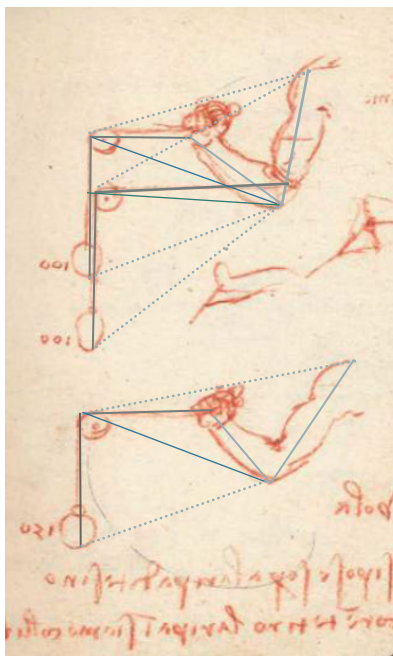
2-8. Leonardo da Vinci, Fables on plants, Codex Atlanticus. fol. 207r, 1490. Veneranda Biblioteca Ambrosiana, Milan.



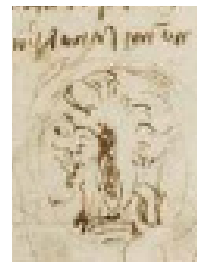
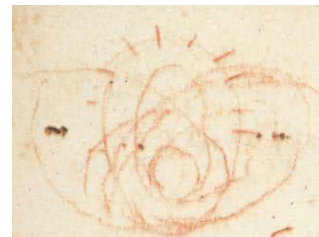
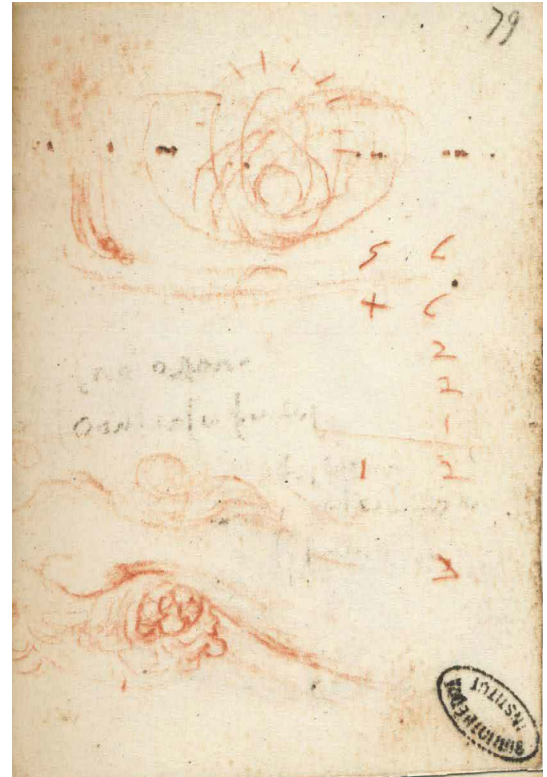
2-9. Leonardo da Vinci, Studies of dynamometers and the fable of the lily. Manuscript H, fol. 44r. 1493-94. Bibliothèque de l'Institut de France, Paris.



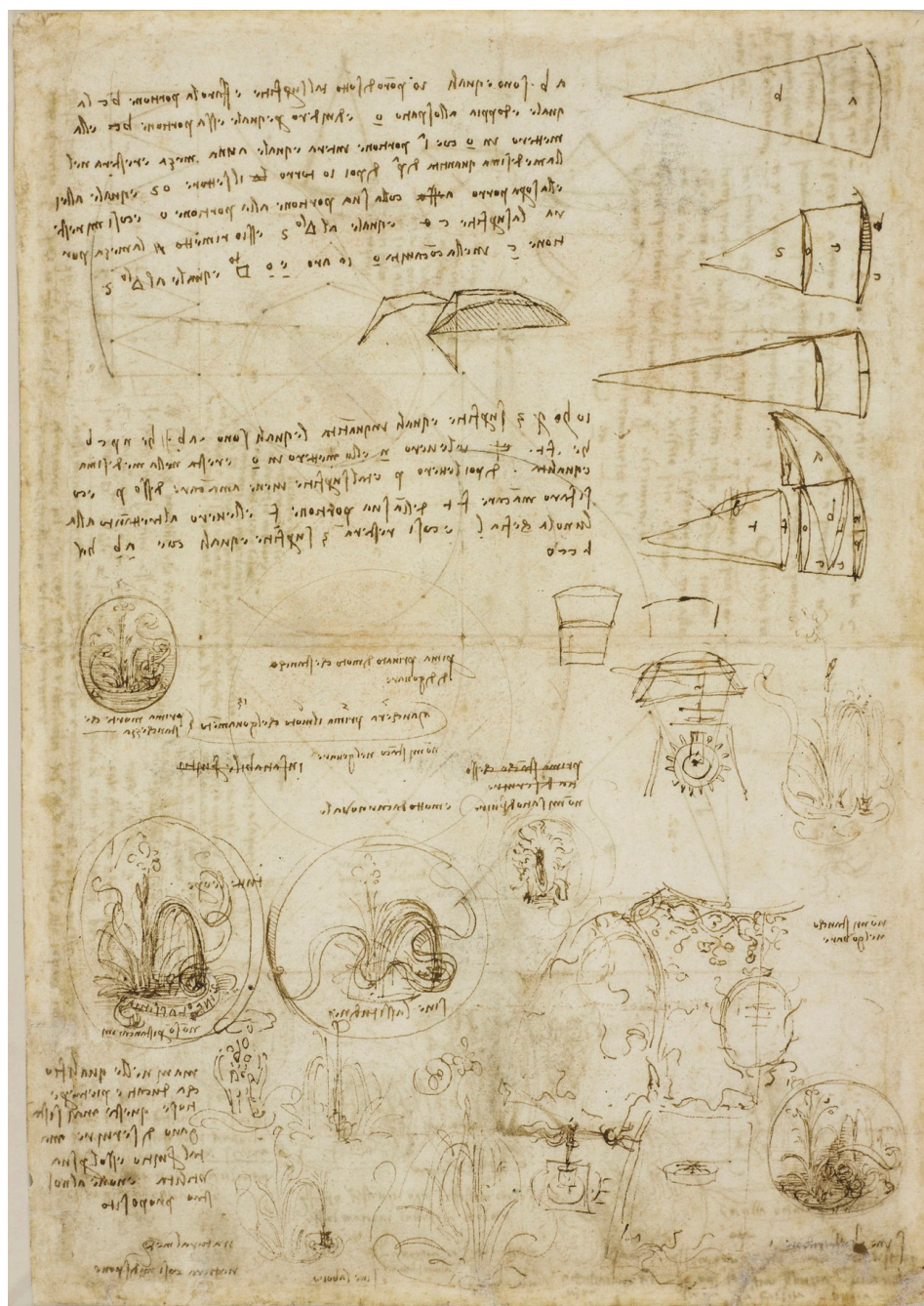
2-10. Leonardo da Vinci, Consequences of water's action on the riverbank. Manuscript H, fol. 43r. 1493-94. Bibliothèque de l'Institut de France, Paris.



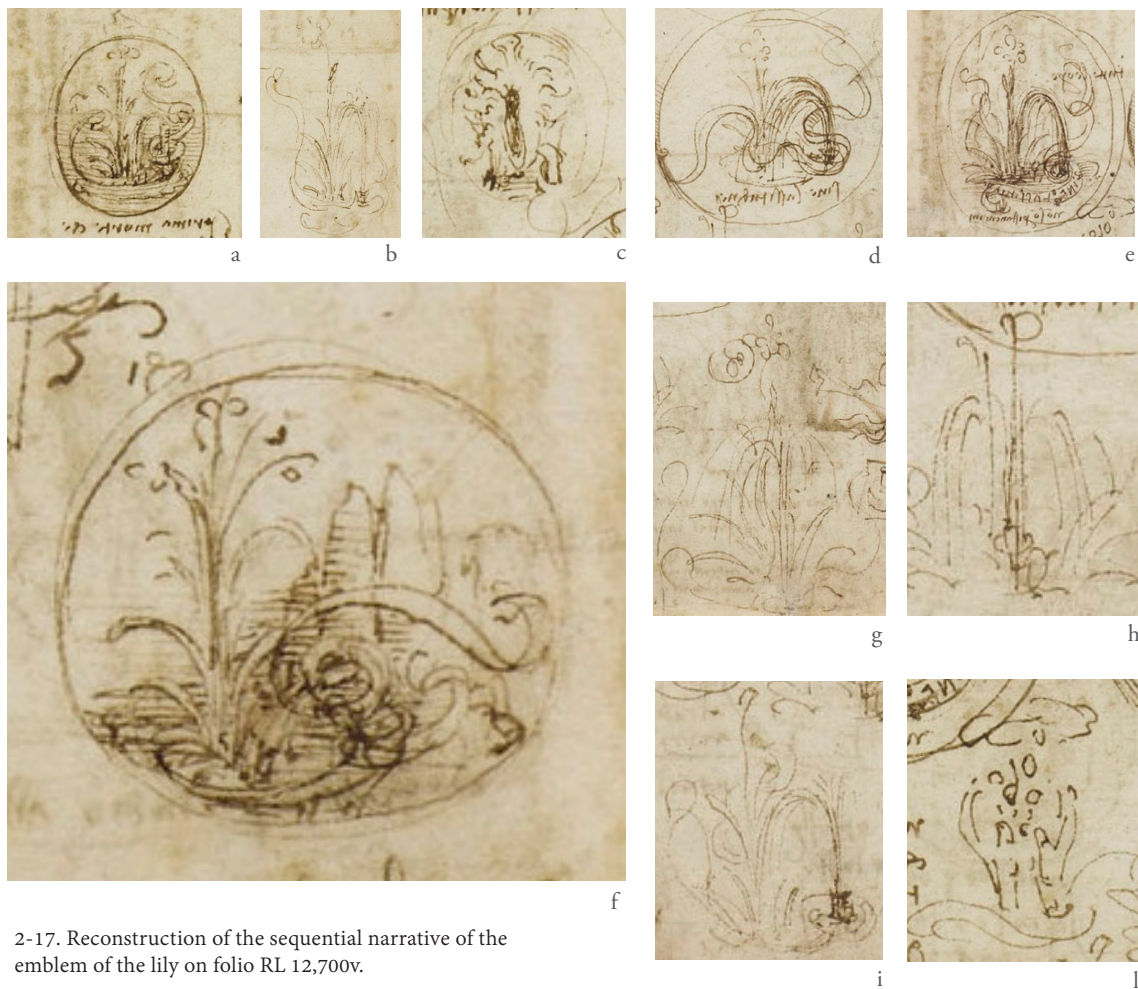
2-11. Analytical Diagrams: Leonardo da Vinci, Studies of dynamometers; Consequences of water's action on the riverbank, details; Tie beams graph. Manuscript H, fol. 43r-v, 44r-v. 1493-94. Bibliothèque de l'Institut de France, Paris.



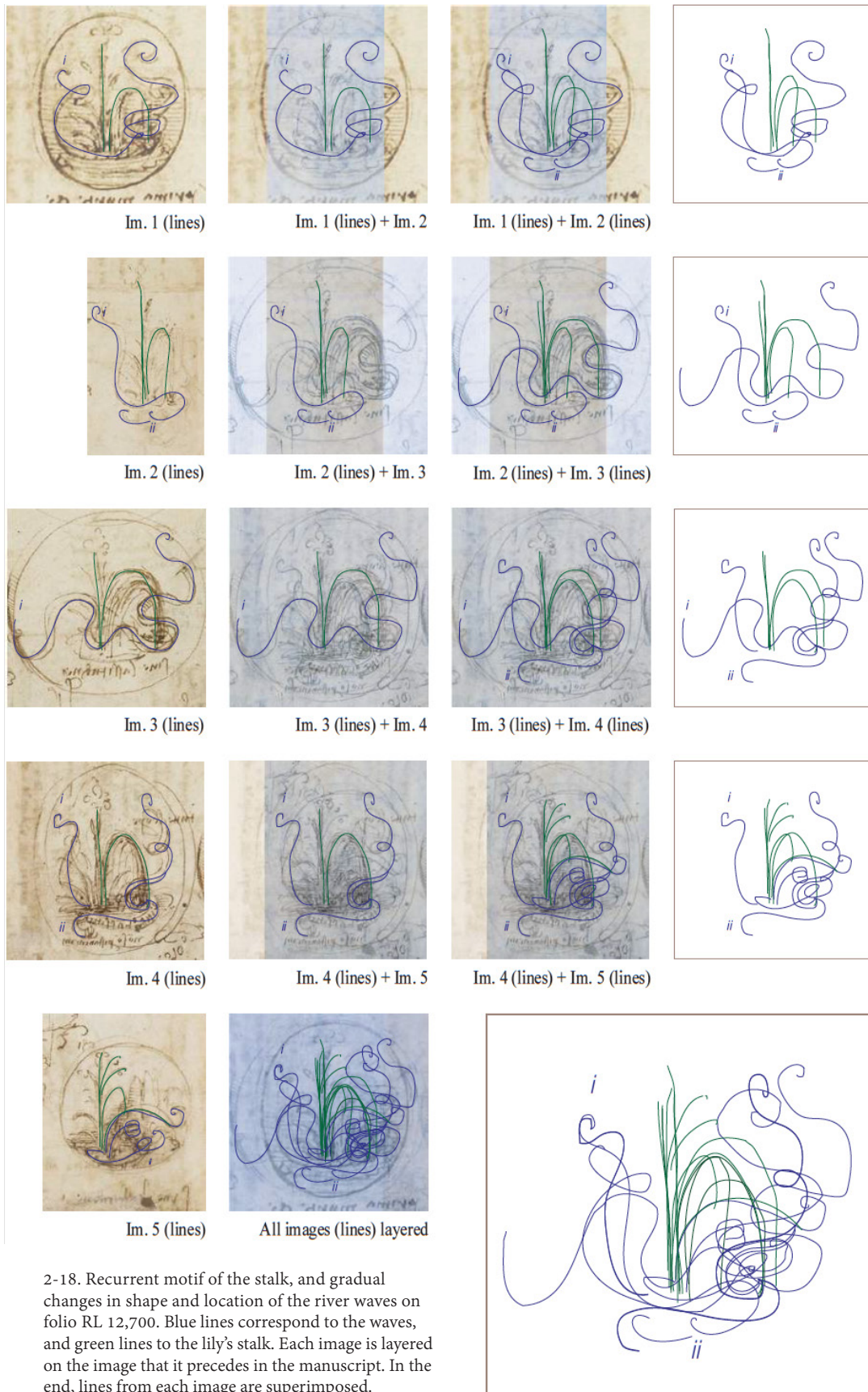
2-12. Leonardo da Vinci, Diagrammatic studies on the causes and consequences of the current on the riverbank. Manuscript H. fol. 68v. 1493-94;
 2-13; 2-14. Leonardo da Vinci, The bend in a river, at which an inlet gathers water. Manuscript H. fol. 127r-v. 1493-94. Bibliothèque de l'Institut de France, Paris.
 2-15. Leonardo da Vinci, Lily and diagrams, details. Manuscript H. fols. 68v; 127r-v; and RL 12,700v, 1508-10. The Royal Collection of Windsor, Berkshire.

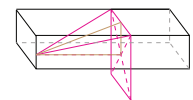
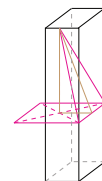
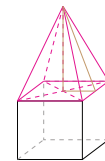
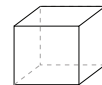
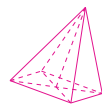
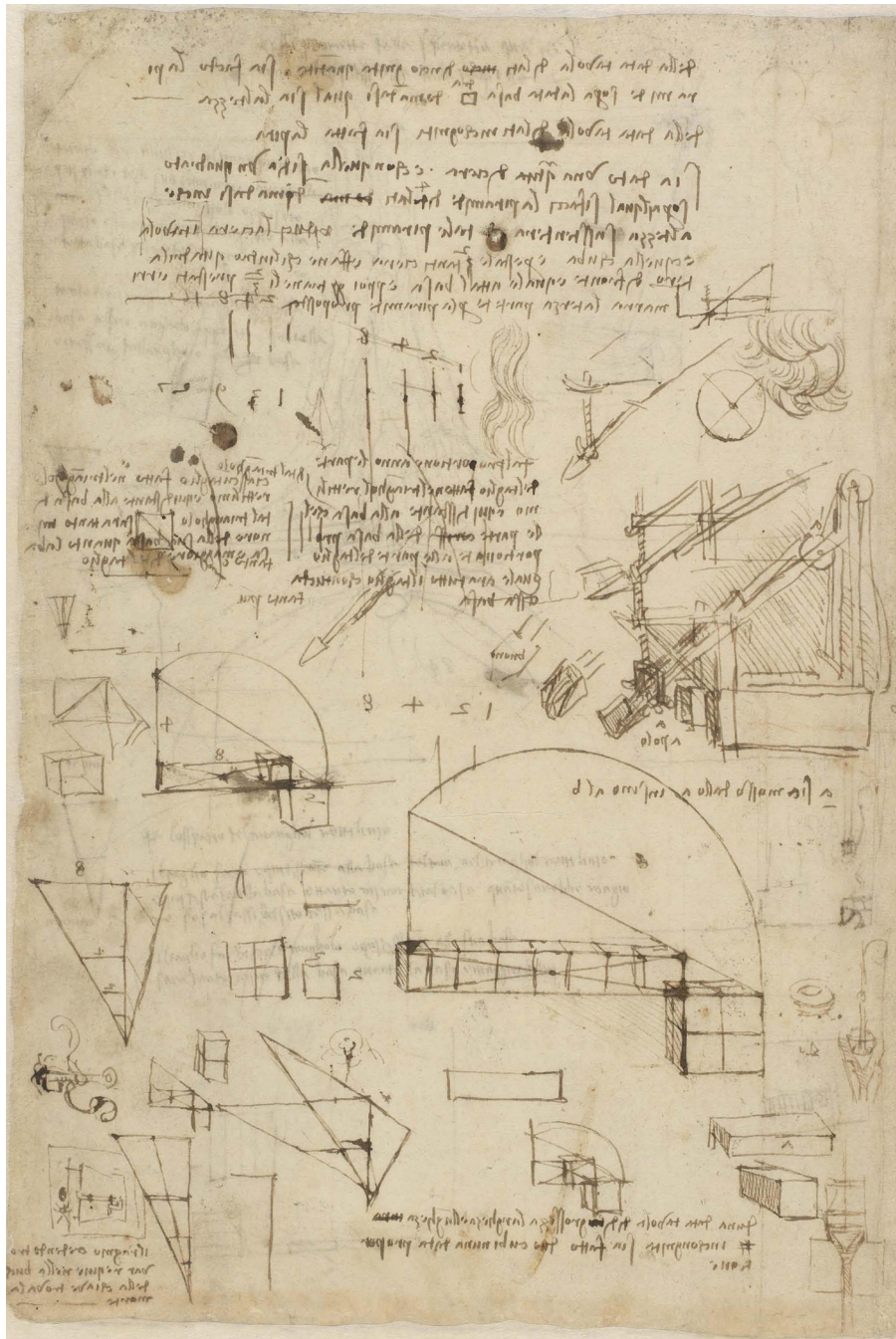


2-16. Leonardo da Vinci, Emblem of the lily, and diagrams and notes on geometry. RL 12,700v. 1508-10. The Royal Collection of Windsor, Berkshire.



2-17. Reconstruction of the sequential narrative of the emblem of the lily on folio RL 12,700v.





2-19. Leonardo da Vinci, Fable and emblem of the spider, and diagrams and notes on geometry. Codex Atlanticus, fol. 820v. 1494-1501. Veneranda Biblioteca Ambrosiana, Milan; Diagrammatic study of diagrams on folio 820v: transformation of geometrical shapes.

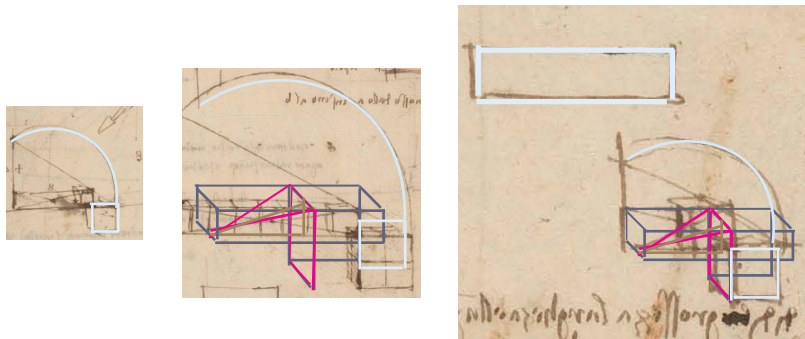
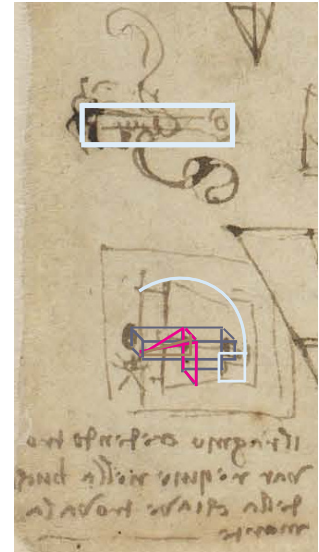


Fig. 2-20. Diagrammatic study of recurrent patterns on folio 820v: correspondences in shape between technical drawings of the transformation of the parallelepiped into a cube and the sketches of the padlock and the key above the fable.



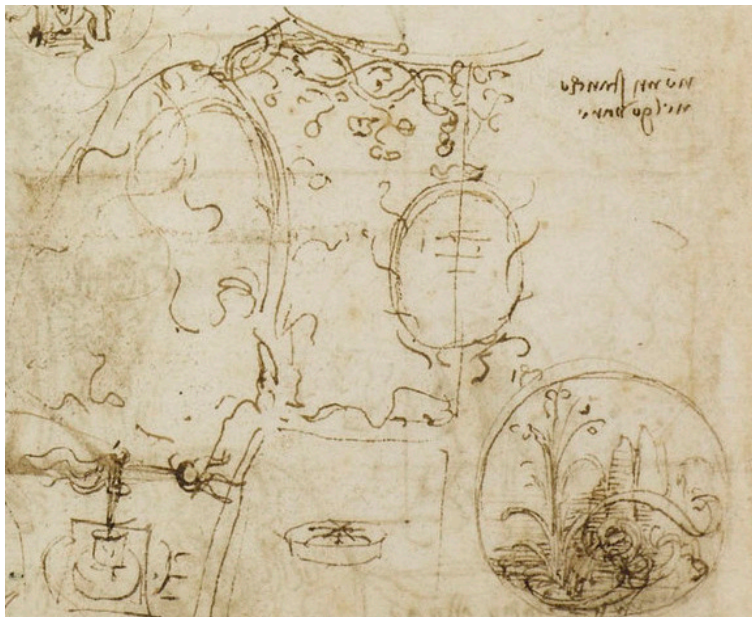
a



b



c



d

Fig. 2-21. Juxtapositions: the evolution of the emblem of the spider and the grape on folio 820v from the Codex Atlanticus and on folio RL 12,700v.

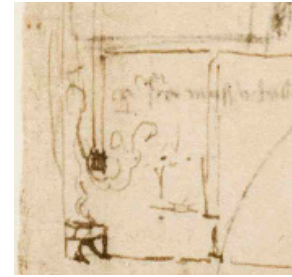
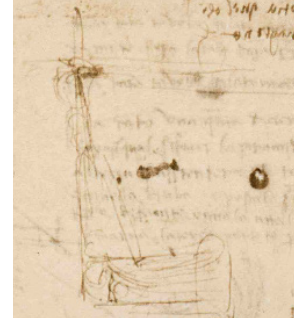
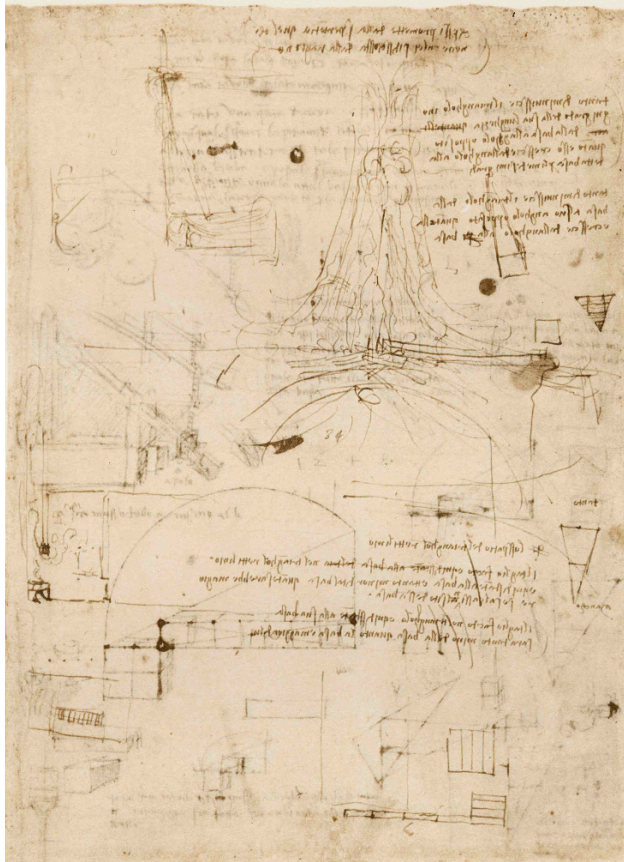
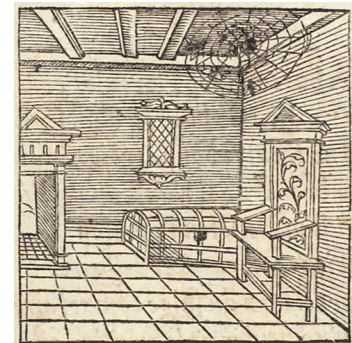
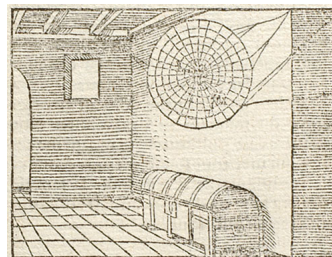
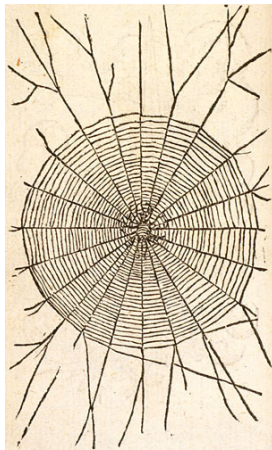
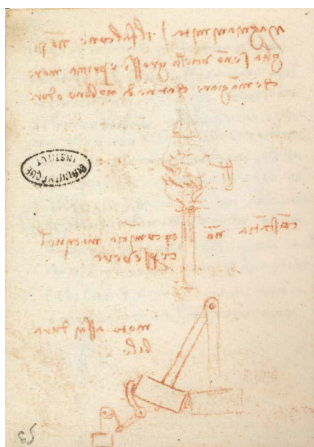


Fig. 2-22. Leonardo da Vinci, Fable and emblem of the spider, and diagrams and notes on geometry. Codex Atlanticus, fol. 820r. 1494-1501. Veneranda Biblioteca Ambrosiana, Milan.

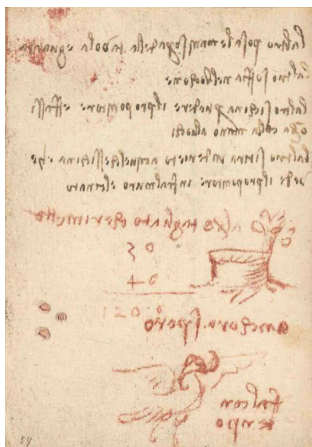


2-23. Codice Panciatichi 63, I libri delle Metamorfosi d'Ovidio, volgarizzamento da ser Arrigo Simintendi da Prato, fol. 48v, c. 1370-80. Biblioteca Nazionale, Florence.

Claude Paradin, Devises heroïques (Lyon, 1557); Pierre Coustau, Ad araneam (Lyon, 1555); Guillaume La Perriere, Le theatre des bon engins (Lyon, 1540), Glasgow University, Glasgow.



2-24. Leonardo da Vinci, Emblem of constancy. Manuscript H, fol. 101r. 1493-94. Bibliothèque de l'Institut de France, Paris.



2-25. Leonardo da Vinci, Emblem of the falcon. Codex Forster II, fol. 63r. 1494-97. Victoria and Albert Museum, London.

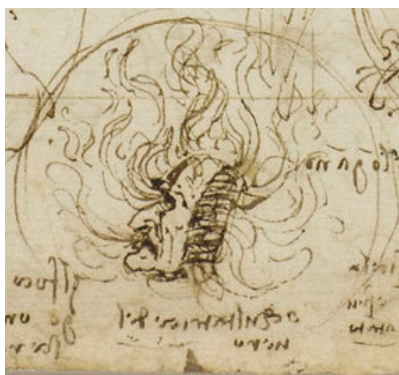
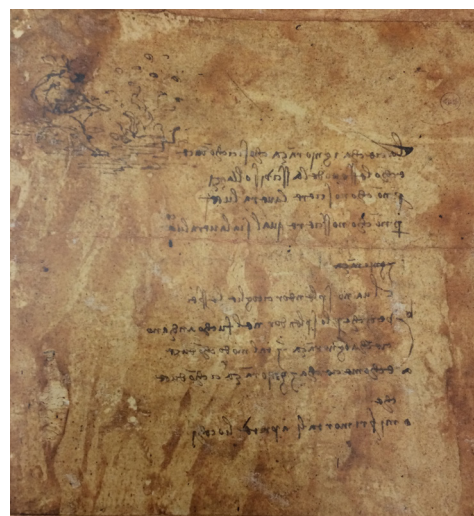


2-26. Low relief with the emblem of the falcon. Certosa of Saint Cristoforo, Ferrara.

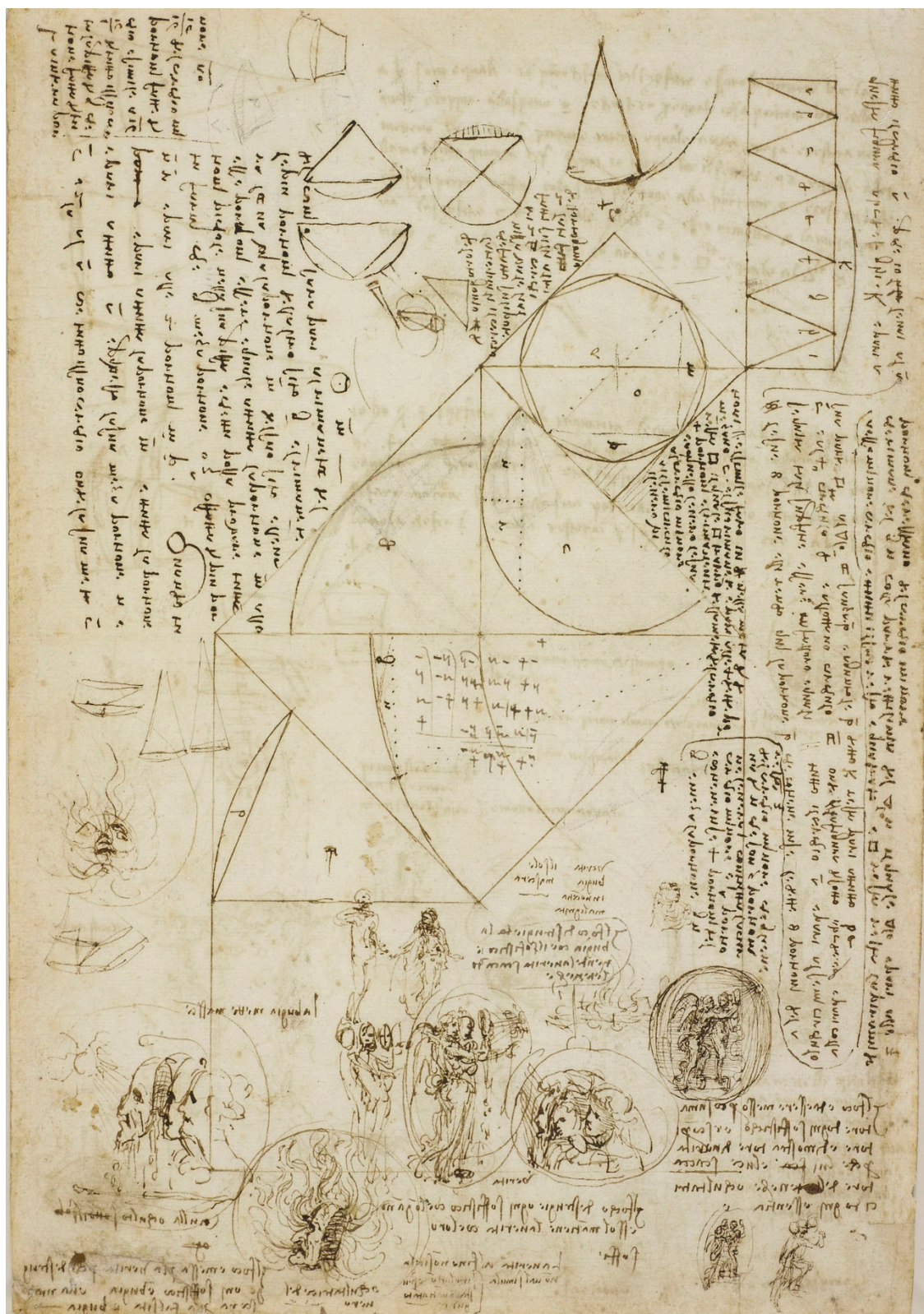
2-28. Leonardo da Vinci, Emblem of the butterfly. BT 15578v. 1485. Biblioteca Reale, Turin.



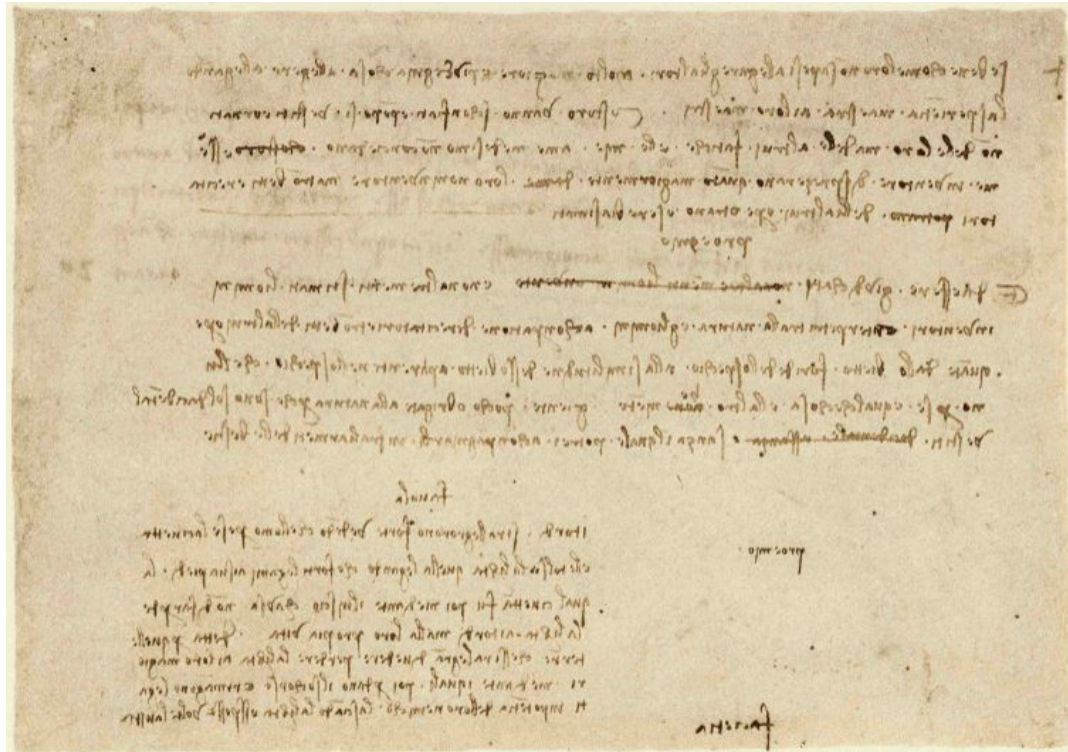
2-27. The emblem of the butterfly. Camillo Camilli, *Imprese illustri*, pl. 35, 1586. Warburg Institute, London. Paolo Giovio, *Dell'impres*e, 25, 1565. Bibliothèque Nationale de France, Paris.



2-29. Sequential narrative of the emblem of the mirror on folio RL 12700r.



2-30. Leonardo da Vinci, Emblem of the mirror, and diagrams and notes on geometry, RL 12,700r. 1508-10. The Royal Collection of Windsor, Berkshire.



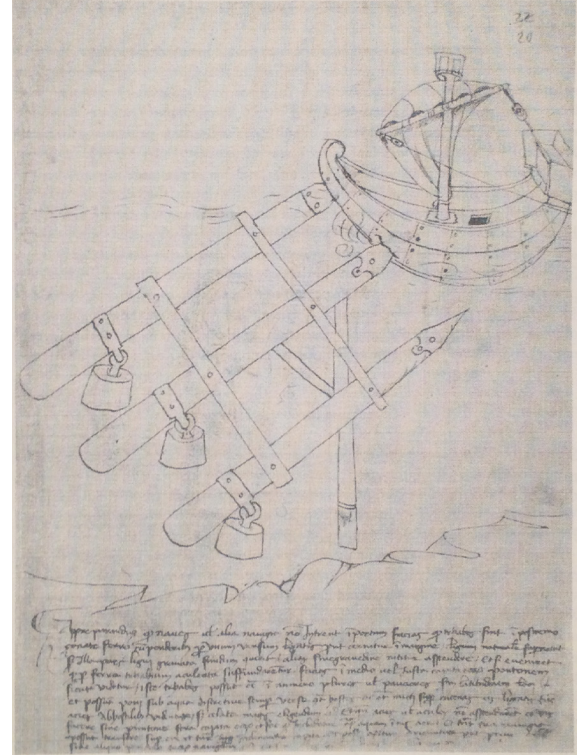
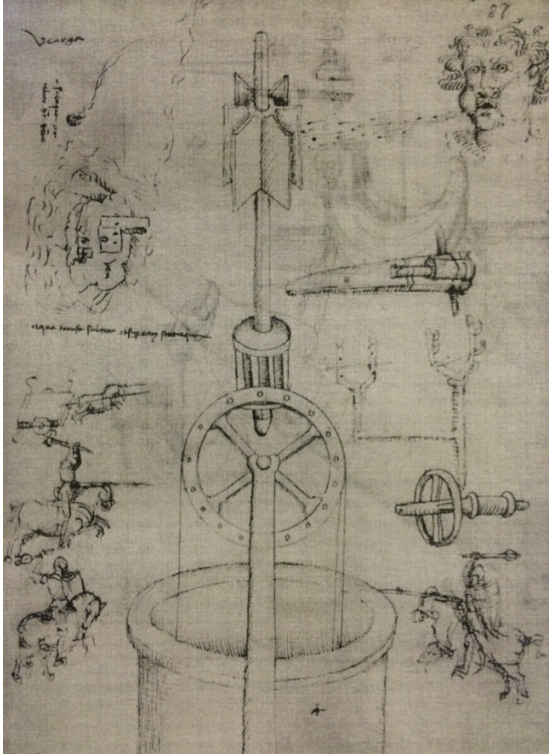
3-1. Leonardo da Vinci, Preface, fable, and facetia. Codex Atlanticus, fol. 323r. 1490-1500. Veneranda Biblioteca Ambrosiana, Milan.



3-2. Andrea Alciato, Emblemata, 83. 1531. Bibliothèque Nationale de France, Paris.



3-3. Leonardo da Vinci, Emblem of the goldfinch. Manuscript H, fol. 63v. 1493-94. Bibliothèque de l'Institut de France, Paris.



3-4. Mariano di Iacopo, Taccola, Study of a well. De Machinis, fol. 87r. 1425-40. Bayerische Staatsbibliothek, Munich.

3-5. Mariano di Iacopo, Taccola, Pile driver hitting a ship. De Machinis, fol. 20r. c. 1440. Bayerische Staatsbibliothek, Munich.



3-6. Giuliano da Sangallo, Step-end with bird, flower, and lizard (no. 5). 1490-1501. Victoria and Albert Museum, London.



3-7. Giuliano da Sangallo, Step-end with bird, grasshopper, and snail (no. 13). 1490-1501. Victoria and Albert Museum, London.



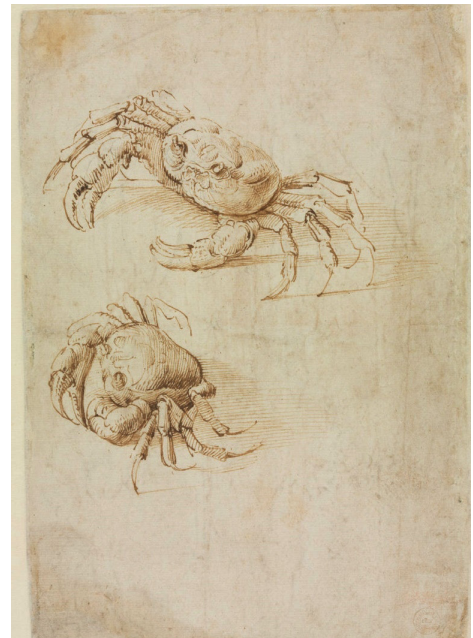
3-8. Leonardo da Vinci, Emblem of the lizard. MET 17.142.2. 1496. Metropolitan Museum of Art, New York;
Giuliano da Sangallo, Step-end with crow and snake (no. 10). 1490-1501. Victoria and Albert Museum, London.

3-9. Giuliano da Sangallo, SIN.
Stone ceiling above
staircase, detail.
Gondi Palace,
Florence.



3-10. Giuliano da Sangallo, Step-ends with flowers standing and bowing down. 1490-1501. Victoria and Albert Museum, London.

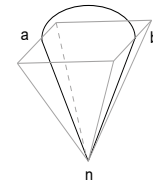
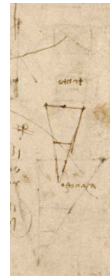
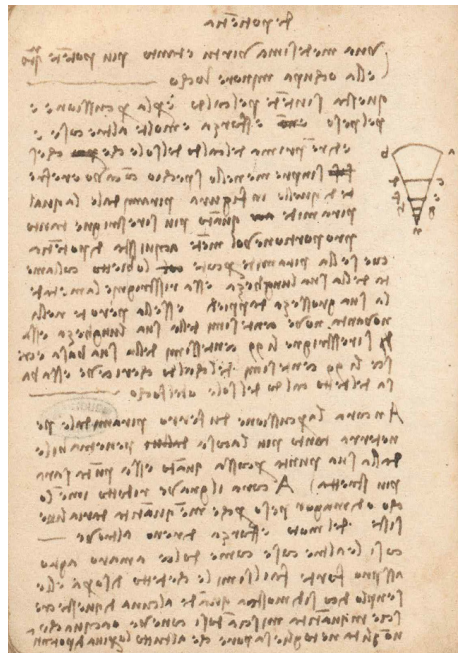
3-11. Giuliano da Sangallo, Step-end with crane holding a crab (no. 14).
1490-1501. Victoria and Albert Museum, London;
Crab sculptural relief. West front, left portal. 1225-35. Notre-Dame,
Amiens; Agostino di Duccio, Crab sculptural relief. 1449-57. Chapel of
Saint Jerome. Rimini, Tempio Malatestiano.



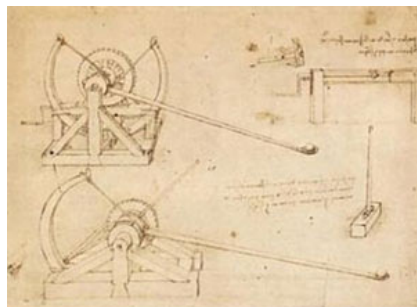
3-12. Leonardo da Vinci, Crabs. Z203v. 1480.
Wallraf-Museum, Cologne.

3-13. Leonardo da Vinci, Allegorical
motives and crab.
Al600-NI1778.
c. 1480. Musée
Bonnat, Bayonne;
Giuliano da
Sangallo, Sienese
sketchbook, fols.
43v, 38v Biblioteca
Comunale degli
Intronati, Siena.

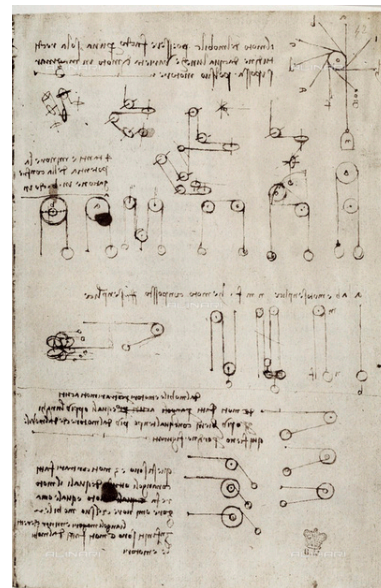
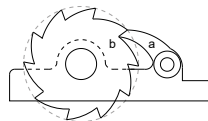




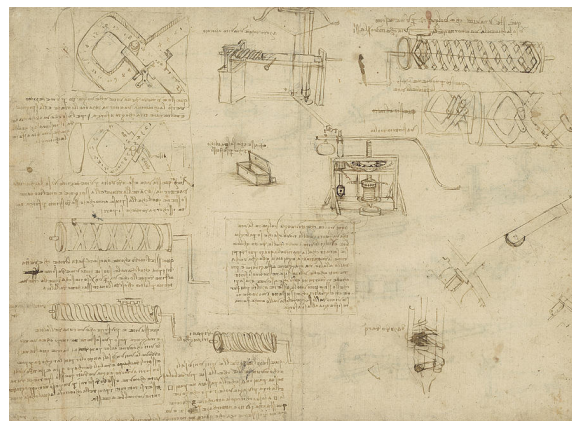
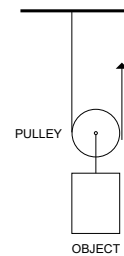
3-14. Leonardo da Vinci, Pyramidal decrease model.
Manuscript G, fol. 89v. c. 1510-15. Bibliothèque de l'Institut de France, Paris;
Leonardo da Vinci, "Tanto-manco." Codex Atlanticus, fol. 820r.
1494-1501. Veneranda Biblioteca Ambrosiana, Milan.



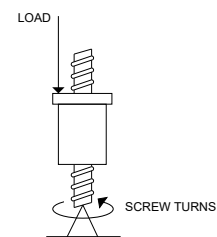
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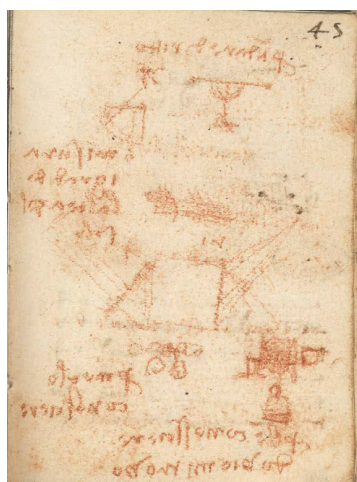
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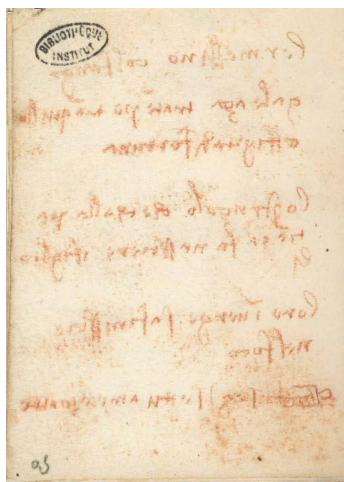
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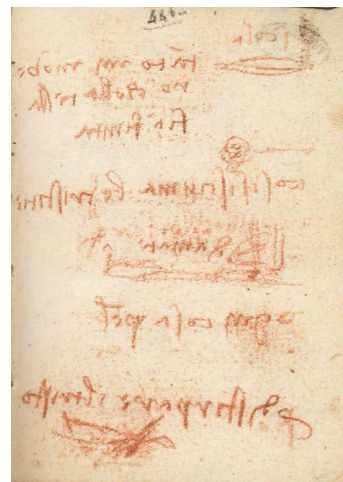
3-15. Leonardo da Vinci, Wheel, pulley and screw models from the Codex Atlanticus:
(a) Wheel mechanism and catapult; (b) Studies of pulleys; (c) Screws and lathe assembling press for olives
for oil production and components of plumbing machine.



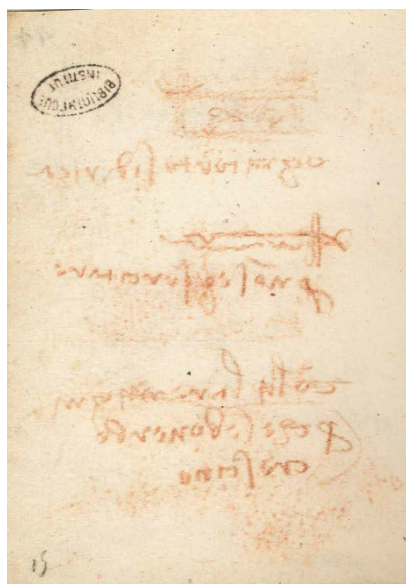
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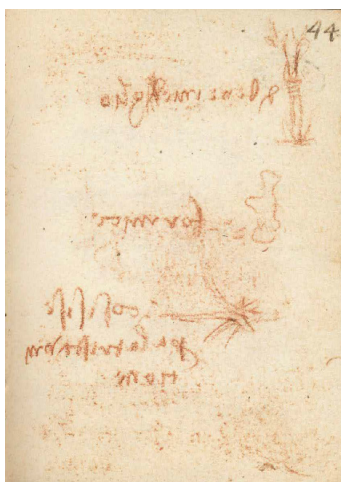
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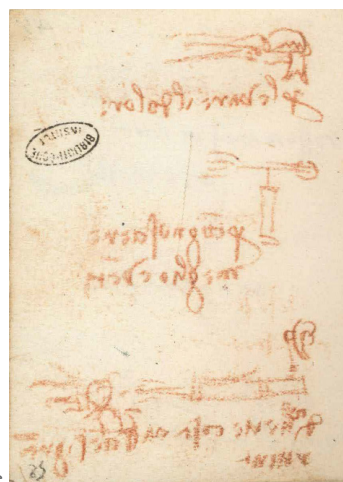
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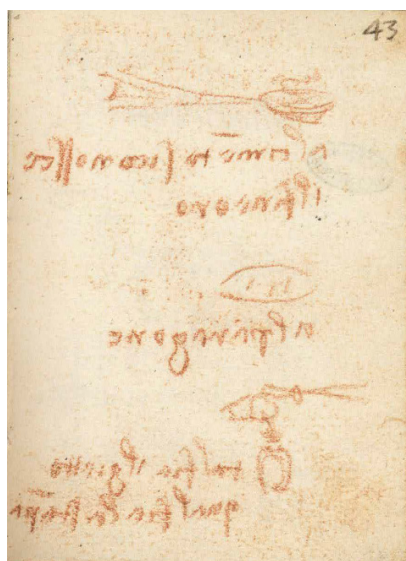
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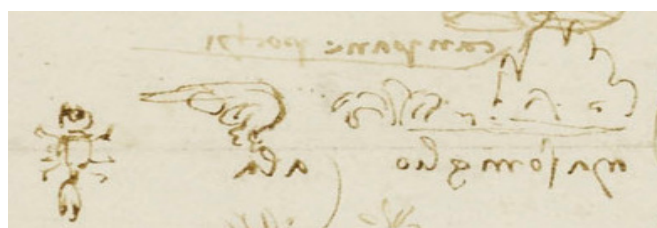
e



f

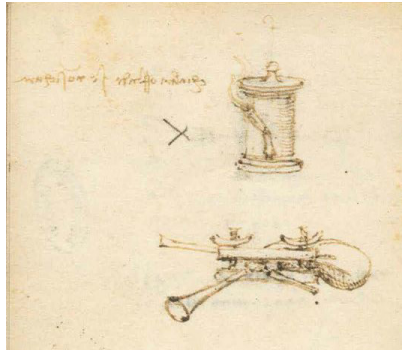
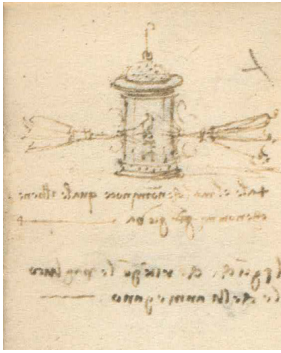


g



3-16. Leonardo da Vinci, Mechanical devices in form of emblems (a-g). Manuscript H, fols. 97v-101v. c. 1493-94. Bibliothèque de l'Institut de France, Paris.

Leonardo da Vinci, Rebus of the ant. RL 12692r. c. 1487-90. The Royal Collection of Windsor, Berkshire.



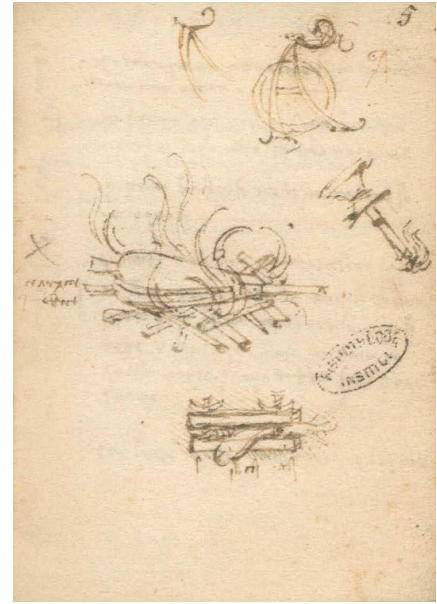
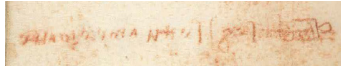
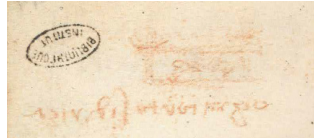
a

b

3-17. Leonardo da Vinci, Emblems of the bellows and the clamp. Manuscript M, fols. 4r-5r. c. 1498-99;

Leonardo da Vinci, Emblems of the bellows and the clamp. Manuscript H, fols. 99r, and 98r. c. 1493-94.

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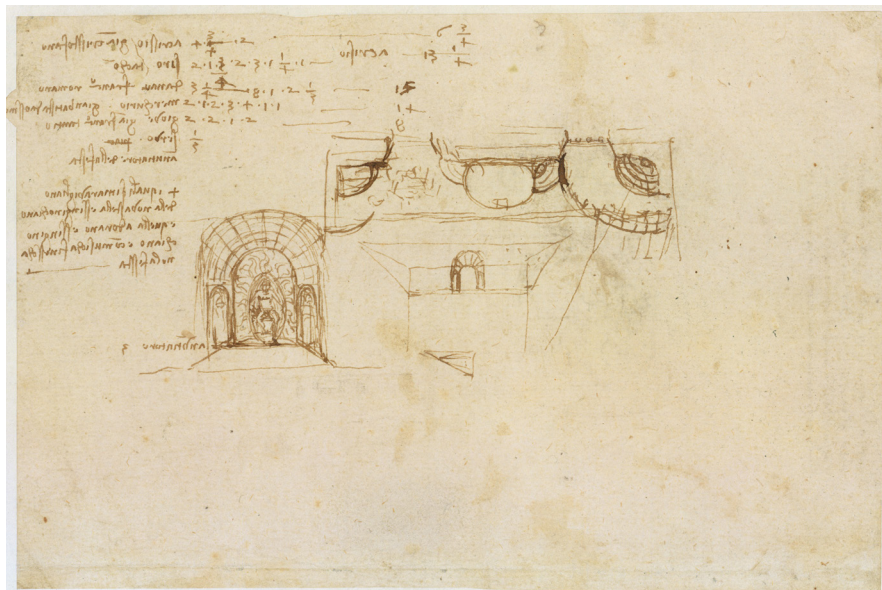
c



3-18. Leonardo da Vinci, A cloudburst of material possessions, RL 12698. 1510-13. The Royal Collection of Windsor, Berkshire.



3-19. Leonardo da Vinci,
Schematization of water
with lines of movement.
Manuscript F, 20r. c. 1508.
Bibliothèque de l'Institut de
France, Paris.



3-20. Leonardo da Vinci, Design for a stage setting. MET
17.142.2. 1496v. Metropolitan Museum of Art, New York;
Juxtapositions of Leonardo's emblems of lizard and of the pen and
the inkpot with other emblems from the Metropolitan Museum,
the Royal Collection of Windsor, and the Biblioteca Ambrosiana.

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* I put in square brackets the names of the books as Leonardo refers to them in his library lists.

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Appendix

I

TEXTUAL MODELS

Group I

| CAUSES | | EFFECTS | |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------|
| force A | <i>action a</i> | force B | <i>reaction b</i> |
| (3) Il vino | <i>consumato</i> | dallo imbrocio. | esso col bevitore si <i>vendica</i> . |
| (2) Il lume, | foco <i>ingordo</i> sopra la candela, <i>consumando</i> | quella [candela] | se <i>consuma</i> . |
| (5) Il foco | [...] vo' per forza di bollire <i>cacciare</i> l'acqua del lavggio | onde quella [acqua] | per farli onore d'ubbidienza discende in basso e <i>annega</i> il fuoco. |
| (6c) Lo specchio | si <i>groria</i> forte tenendo dentro a se specchiata | la regina | e, <i>partita</i> quella, lo specchio riman vile. |
| (7) Il pesante ferro | si <i>reduce</i> in tanta sottilità mediante la lima, | che piccolo vento | poi lo <i>porta via</i> . |
| (13) La vitalba, | non istando contenta nella sua siepe, cominciò a passare co' sua rami la comune strada e <i>appiccarsi</i> all'opposita siepe | onde da' viandanti | poi fu <i>rotta</i> . |
| (41) Il ligio | <i>si pose</i> sopra la ripa di tesino | e la corrente | <i>tirò</i> la ripa insieme col lilio. |
| (52) Il ragno | <i>credendo</i> trovar requie | nella buca della chiave | <i>trova</i> la <i>morte</i> . |
| (45) Il ragno | <i>stante</i> infra all'uve <i>pigliava</i> le mosche che in su tale uve si pasceva<n> | <i>venne</i> la vendemmia | e <i>fu pesto</i> il ragno insieme coll'uve. |
| (12) <i>Trovato</i> il ragno | uno grappolo d' uve, il quale [...] era molto visitato da ave e diverse qualità di mosche, <i>li parve</i> avere trovato loco molto comodo al suo inganno [...] | e così l'uva | <i>fu laccio</i> e ' <i>nganno</i> dello ingannatore ragno, come delle ingannate mosche. |
| (17) Il ragno | <i>volendo pigliare</i> la mosca con le sue false rete, fu | sopra quelle dal calabrone | crudelmente <i>morto</i> . |
| (29) <i>Avendo</i> il cedro | <i>desiderio di fare</i> uno bello e grande frutto in nella sommità di sé, <i>lo mise a seguizione</i> con tutte le sue forze del suo omore. | il quale frutto, | cresciuto, <i>fu cagione di fare declinare</i> la elevata e diritta cima. |
| (30) Il persico, | <i>avendo invidia</i> alla gran quantità dei frutti visti fare al noce suo vicino, deliberato di fare il simile, <i>si caricò</i> de' sua in modo tale, | che 'l peso di detti frutti | <i>lo tirò diradicato e rotto</i> alla piana terra. |

| | | | |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| (32) Il fico | stando senza frutti nessuno lo riguardava; <i>volendo</i> , col <i>fare</i> essi frutti, essere laldato | da li omini, | <i>fu</i> da quelli <i>piegato</i> e <i>rotto</i> . |
| (44) El granchio | <i>stando</i> sotto il sasso per <i>pigliar</i> e pesci che sotto a quello entravano, | la piena | <i>venne</i> con rovinoso precipitamento di sassi, e collo rotolarsi <i>sfracelloron</i> tal granchio. |
| (46) La vite | <i>invecchiata</i> sopra | l'albero vecchio, | <i>cadde</i> insieme con la ruina d'esso albero, e <i>fu</i> per la trista compagnia a <i>mancare</i> insieme con quello. |
| (47) Il torrente | <i>portò</i> tanto di | terra e pietre nel suo letto, | che fu po' <i>constretto</i> a mutar sito. |
| (48) La rete, | che <i>soleva pigliare</i> | li pesci, | <i>fu presa e portata via</i> dal furor de' pesci. |
| (49) La palla della neve | quanto più <i>rotolando discese</i> | delle montagne della neve, | tanto più <i>moltiplicò</i> la sua magnitudine. |
| (50) Il salice, | che per li sua lunghi germinamenti <i>cresce</i> <i>da superare</i> ciascuna altra pianta, per <i>avere</i> <i>fatto compagnia</i> | colla vite, | che ogni anno si pota, <i>fu</i> ancora lui sempre <i>storpiato</i> . |
| (51) La penna | necessaria <i>compagnia ha</i> | col temperatoio | e similmente utile compagnia, perché l'una senza l'altro non <i>vale</i> troppo. |
| (31) Il noce | <i>mostrando</i> sopra una strada ai viandanti la ricchezza de' sua frutti, | ogni omo | lo <i>lapidava</i> . |

Group II

CAUSES

force A

(6a) Il dipintore

(6b) il coltello, accidentare armatura,

(9) favola della lingua

action a

*disputa e gareggia**caccia* dall'uomo*morsa*

EFFECTS

force B

colla natura.

le sua unghie, armadura naturale.

dai denti.

reaction b

Group III

| CAUSES | | EFFECTS | |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| force A, A ₁ | <i>action a, a₁</i> | force B, B ₁ | <i>reaction b, b₁</i> |
| (4) Vedendosi la carta | tutta <i>macchiata</i> dalla oscura negrezza dell'inchiostro, di quello <i>si dole</i> ; | el quale [inchiostro] | mostra a essa che per le parole, ch'esso <i>sopra lei compone</i> , essere cagione della conservazione di quella. |
| (1) Trovandosi l'acqua | nel superbo mare, suo elemento, <i>le venne voglia di montare</i> sopra | l'aria [...] onde dalla secca terra | ove <i>cadendo</i> la superbia si converte in fuga, e <i>cade</i> del cielo; fu poi <i>bevuta</i> , dove, lungo tempo <i>incarcerata, fe'</i> <i>penitenza</i> del suo peccato. |
| (8) La pianta | <i>si duole</i> | del palo secco e vecchio, che se l'era posto allato, e de' pruni secchi che lo circondano: | l'un lo <i>mantiene</i> diritto l'altro lo guarda dalle triste compagnie. |
| (10) Il cedro | <i>insuperbito</i> della sua bellezza, <i>dubita</i> delle piante che li son d'intorno, e <i>fattolesi torre</i> innanzi, | il vento poi, | non essendo interrotto, lo <i>gittò</i> per terra <i>diradicato</i> . |
| (11) La formica | <i>trovato</i> un grano di miglio [...] | il quale (grano) | <i>gridò</i> : "se mi fai tanto piacere di lasciarmi fruire il mio desiderio del nascere, io ti render cento di me medesimi." |
| (14) L'asino | <i>addormentatosi</i> sopra il diaccio d'un profondo lago, | il suo calore | <i>dissolvè</i> esso diaccio, e l'asino sott'acqua, a mal suo danno, <i>si destò</i> , e subito <i>annegò</i> . |
| (15) Trovandosi alquanto poca neve appiccata alla sommità di un sasso | [...] <i>raccolto</i> in sé la <i>maginazione</i> , cominciò quella a <i>considerare</i> , e infra a sé <i>dire</i> : "[...] io <i>voglio fuggire</i> la ira del sole [...]." e <i>gittatasi</i> in basso [...] | | quanto più <i>cercò</i> loco basso tanto <i>crebbe</i> la sua quantità [...] e fu l'ultima che in quella state dal sole <i>disfatta fusse</i> . |
| (16) Il falcone | <i>non potendo sopportare</i> con pazienza il nascondere che fa l'anitra <i>fuggendosele</i> dinanzi e <i>entrando</i> sotto acqua, <i>volle</i> come quella sotto acqua seguitare, e <i>bagnatosi</i> le penne, <i>rimase</i> in essa acqua, | e l'anitra, | <i>levatasi</i> in aria, <i>schernia</i> il falcone che annegava. |
| (18) Volendo l'aquila | <i>schernire</i> il gufo, rimase con le ali impaniate, | e fu dall'omo | <i>presa e morta</i> . |
| (19) Il misero salice | <i>trovandosi</i> non potere fruire di vedere i suoi sottili rami [...] <i>dirizzarsi</i> al cielo [...] spalanca le porte alla immaginazione [...] li corse nel pensiero la zucca [...] venuta a se vicina la sgazza, <i>disse</i> inver di quella: "[...] io <i>priego</i> che tu truovi la zucca e impetri da quella alquante delle sue semenze [...]." allora la sgazza [...] <i>pervenne</i> a una zucca e [...] essi grani <i>piantò</i> . | le quali [semenze di zucca] | in breve tempo <i>crescendo</i> , cominciò collo <i>accrescimento e aprimento</i> de' suoi rami a occupare tutti i rami del salice [...]. E, non bastando tanto male, seguendo le zucche, cominciò, per disconcio di peso, a <i>tirare le cime de' teneri rami inver la terra</i> [...] vedendo passare il vento, a quello raccomandandosi, e quello soffiò forte. Allora <i>s'aperse</i> il vecchio e vòto gambo del salice in due parti insino alle sue radici, e <i>caduto</i> in due parti, indarno <i>pianse se</i> medesimo, e <i>conobbe</i> chi era nato per non aver mai bene. |

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (20) Le fiamme, già uno mese durato nella furnace de' bicchieri e veduto a sè avvicinarsi una candela 'n bello e lustrato candelliere | con gran desiderio si forzavano di accostarsi a quella. Infra le quali una [...] si gittò con <i>somma golosità e ingordigia quella</i> <i>divorando</i> , quasi alfine condusse | [la candela] | [...] <i>fu costretta a morire e mancare</i> insieme con la candela; onde al fine con pianto e pentimento in fastidioso fumo si convertì [...]. |
| (21) Il vino, | <i>vedendosi</i> nelle parti maumettane ogni giorno dai bevitori essere messo innelle fastidiose budella e convertito in orina [...] <i>gridò</i> inverso al cielo, <i>chiedendo vendetta</i> di tanto danno [...] | allora Giove | <i>fece</i> che il beuto vino da maumetto elevò l'anima sua inverso il celabro e quello in modo <i>contaminò</i> , che lo fece matto, e partorì tanti errori, che, tornato in sé, fece legge che nessuno asiatico beessi vino. E fu lasciato poi libere le viti co' sua frutti. |
| (22) I' rovistrice, | <i>sendo stimolato</i> nelli sua sottili rami, ripieni di novelli frutti, dai pungenti artigli e becco delle importune merle, <i>si doleva</i> con pietoso rammarichio inverso essa merla, <i>pregando</i> quella che poi che lei li toglieva e sua dilette frutti, il meno nolle privassi de le foglie [...] | a la quale la merla | con villane rampogne <i>rispose</i> : "O <i>taci</i> , salvatico sterpo [...] non sai, villano, che tu sarai innella prossima invernata nutrimento e cibo del foco?" [...] toccò, infra l'altri rami, al sottile rovistrico a fare le vimini della gabbia, le quali vedendo esser causa della persa libertà del merlo, rallegratosi, <i>mosse</i> tale parole: "O merlo, i' son qui non ancora consumata, come dicevi, dal foco; prima vederò te prigione, che tu me bruciata." |
| (23) Vedendo il lauro e mirto tagliare il pero, | con alta voce <i>gridarono</i> : "O pero, ove vai tu? ov'è la superbia che avevi quando avevi i tua maturi frutti? Ora non ci farai ombra colle tue folte chiome." | allora il pero | <i>rispose</i> : "Io ne vo coll'agricola che mi <i>taglia</i> , e mi porterà alla bottega d'ottimo sculture, il quale mi farà con su' arte pigliare la forma di Giove iddio, e sarò dedicato nel tempio, e dagli omini adorato invece di Giove, e tu ti metti in punto a rimanere ispezzo <i>storpiata e pelata</i> de' tua rami, i quali mi fieno da li omini per onorarmi posti d'intorno." |
| (39) La pietra, | <i>essendo battuta</i> dall'acciarolo del foco, forte si maravigliò, e con rigida voce <i>disse</i> a quello: "che presunzio ti move a darmi fatica? [...]" | al quale l'acciarolo | <i>rispose</i> : "se sarai paziente, vedrai che maraviglioso frutto uscirà di te." Alle quale parole la pietra, datosi pace, con pazienza <i>stette</i> forte al martire, e <i>vide</i> di sé nascere il maraviglioso foco [...]" |
| (40) Andando il dipinto parpaglione [...] | li venne visto un lume [...] e, <i>dirizzato</i> il <i>suo volo</i> con ardito animo passò per esso lume, | el quale [lume] | gli <i>consumò</i> li stremi delle alie e gambe e altri ornamenti [...] e restaurato alquanto le mancate forze, riprese un altro volo, e, passato attraverso del corpo d'esso lume, cadde subito bruciato nell'olio che esso lume notria, e restogli solamente tanta vita, che potè considerare la cagion del suo danno [...] |
| (42) Sendo l'ostriga | insieme colli al<tri> pesci in casa del pescatore scaricata vicino al mare, <i>priega</i> il ratto che al mare la conduca. | il ratto, | fatto disegno di mangiarla, la fa aprire e <i>mordendola</i> , questa li serra la testa e si lo ferma. viene la gatta e l' <i>uccide</i> . |
| (43) Vedendo il villano | la utilità che risultava dalla | vite, | le dette molti sostentaculi da sostenerla in alto, e, preso il frutto, levò le pertiche e quella <i>lasciò</i> <i>cadere</i> , facendo foco de' sua sostentaculi. |
| (24) Vedendo il castagno l'uomo sopra il fico, il quale piegava | <i>crollando</i> i lunghi rami e con temultevole mormorio <i>disse</i> : «o fico, quanto se' tu men di me obrigato alla natura! vedi come in me ordinò serrati i mia dolci figlioli [...] a ciò | allora il fico | <i>cominciò</i> insieme co' sua figlioli a <i>ridere</i> , e ferme le risa, <i>disse</i> : "Conosci l'omo essere di tale ingegno, che lui ti sappi colle pertiche e pietre e sterpi, tratti infra i tua rami, farti povero de' tua frutti, e quelli |

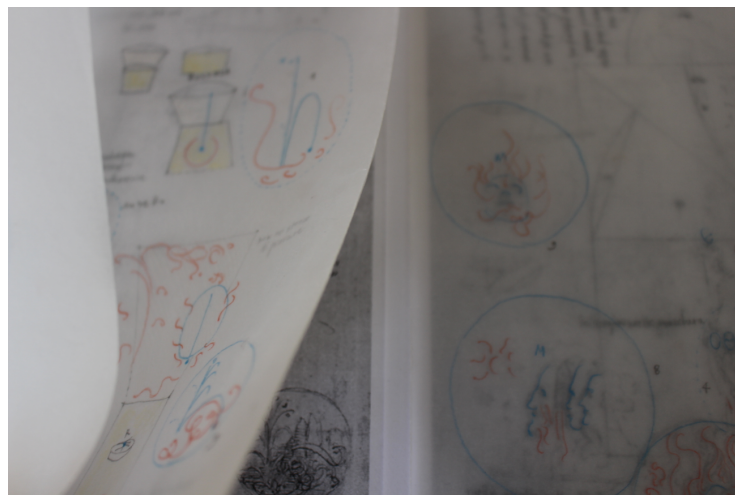
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| inverso sé i suoi rami, e di quelli ispacciava i maturi frutti | che le mani dell'omo non mi possino nuocere.” | | caduti, peste co' piedi e co' sassi [...] e io sono con diligenza tocco dalle mani, e non come te da bastoni e da sassi.” |
| (25) <i>Non si contentando il vano e vagabondo parpaglione</i> | vinto dalla dilettevole fiamma della candela, <i>diliberò</i> volare in quella | imperò che 'n detto lume | si <i>consumarono</i> le sottili ali [...] |
| (26) <i>Trovandosi la noce</i> | essere dalla cornacchia portata sopra un alto campanile, e per una fessura, dove cadde, fu liberata dal mortale suo becco, <i>pregò</i> esso muro [...] che la dovessi soccorrere; | [...] il muro, mosso a compassione, | fu contento ricettarla nel loco ov'era caduta. E infra poco tempo, la noce cominciò <i>aprirsi</i> , e mettere le radici infra le fessure delle pietre, e quelle <i>allargare</i> , e <i>gittare</i> i rami fori della sua caverna; e quegli in breve levati sopra lo edificio e ingrossate le ritorte radici, cominciò aprire i muri e <i>cacciare</i> le antiche pietre de' loro vecchi lochi. Allora il muro tardi e indarno <i>pianse</i> la cagione del suo danno, e, in breve aperto, <i>rovinò</i> gran parte delle sue membre. |
| (27) <i>Trovando la scimmia un nidio di piccioli uccelli, tutta allegra appressatasi a quelli, e quali essendo già da volare,</i> | ne poté solo <i>pigliare</i> il minore. Essendo piena di allegrezza, con esso in mano se n'andò al suo ricetta; e cominciato a <i>considerare</i> | questo uccelletto, | lo cominciò a baciare; e per lo isvecero amore, tanto lo <i>baciò e rivolse e strinse</i> ch'ella gli tolse la vita |
| (28) <i>Stando il topo</i> | <i>assediato</i> in una piccola sua abitazione, | dalla donnola, | la quale con continua vigilanza attendea alla sua <i>disfazione</i> , e per uno piccolo spiraculo <i>raggiardava</i> il suo gran periculo. Infrattanto venne la gatta e subito <i>prese</i> essa donnola, e immediate l' <i>ebbe divorata</i> . Allora il ratto, <i>fatto sacrificio</i> a Giove d'alquante sue nocchie, <i>ringraziò</i> sommamente la sua deità; e <i>uscito</i> fori dalla sua busa a possedere la già persa libertà, de la quale subito, insieme colla vita, fu dalle feroci unghia e denti della gatta <i>privato</i> . |
| (33) <i>Stando il fico vicino all'olmo,</i> | e <i>riguardando</i> i suoi rami essere senza frutti [...] <i>disse</i> : “O olmo, non hai tu vergogna a starmi dinanzi? Ma aspetta ch'è mia figlioli sieno in matura età, e vedrai dove ti troverai.” I quali figlioli poi maturati, | capitandovi una squadra di soldati, | fu da quelli, per torre i suoi fichi, tutto <i>lacerato e diramato e rotto</i> . Il quale stando poi così storpiato delle sue membra, l'olmo lo dimandò dicendo: “O fico, quanto era il meglio a stare senza figlioli, che per quelli venire in sì miserabile stato.” |
| (34) Un poco di foco, | che in un piccolo carbone infra la tiepida cenere <i>remaso</i> era, del poco omore, che in esso restava, carestiosa e poveramente se medesimo <i>notria</i> | quando la ministra della cucina | [...] col solfanello, <i>resuscitato</i> esso foco [...] rallegratosi il fo<co> delle sopra sé poste secche legne, <i>comincia a elevarsi</i> [...] quando le fiamme più altiere percosse nel fondo della superiore caldara. |
| (35) I tordi | si <i>rallegrarono</i> forte vedendo che l'omo <i>prese</i> la civetta | la qual civetta | <i>fu</i> poi, mediante il vischio, causa non di far <i>perdere</i> la libertà ai tordi, ma la loro propria vita [...]. |
| (36) Il cane | <i>dormendo</i> sopra la pelle di un castrone, | una delle sue pulci, | sentendo l'odore della unta lana, <i>giudicò</i> quello doversi essere loco di migliore vita [...] <i>abbandonò</i> il cane [...] onde, dopo lungo travaglio e fatica, |

| | | | |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | <i>cominciò a volere ritornare</i> al suo cane, il quale essendo già partito, fu costretta, dopo lungo pentimento, amari pianti, a <i>morirsi</i> di fame. |
| (37) Il rasoio | <i>uscendo</i> un giorno di quel manico col quale si fa guaina a sé medesimo, e <i>postosi</i> | al sole, | vide lo sole ispecchiarsi nel suo corpo: ella qual cosa prese somma groria, e rivolto col pensiero indirieto, cominciò con seco medesimo a dire: “or tornerò io piùa quella bottega, della quale novamente uscito sono? Certo no [...].” E così, nascosto per alquanti mesi, un giorno ritornato all’aria, e uscito fori della sua guaina, vide sé essere fatto a similitudine d’una rugginente sega, e la sua superficie non ispecchiare più lo splendente sole. con vano pentimento indarno <i>pianse</i> lo irreparabile danno, con seco <i>dicendo</i> : “O quan<to> meglio era esercitare col barbiere il mi’ perduto taglio di tanta sottilità. dov’è la lustrante superfizie? certo la fastidiosa e brutta ruggine l’ha consumata” [...]. |
| (38) Una pietra | novamente per l’acque <i>scoperta</i> , di bella grandezza, si stava sopra un certo loco rilevata, e vedea la gran somma delle pietre che nella a sé sottoposta strada collocate erano. <i>Le venne desiderio</i> di la giù lasciarsi <i>cadere</i> , <i>dicendo</i> con seco: “Che fo qui con queste erbe? Io voglio con queste mie sorelle in compagnia abitare.” e giù <i>lassatosi cadere</i> infra le desiderate compagne <i>finì</i> il suo volubile corso; e stata alquanto <i>cominciò a essere</i> | da le rote de’ carri, dai piè de’ ferrati cavalli e de’ viandanti, | a <i>essere in continuo travaglio</i> ; chi la volta, quale la <i>pestava</i> , alcuna volta si levava alcuno pezzo, quando stava coperta dal fango o sterco di qualche animale, e invano riguardava il loco donde partita s’era, innel loco della soletaria e tranquilla pace [...]. |

II

ANALYTICAL DRAWINGS

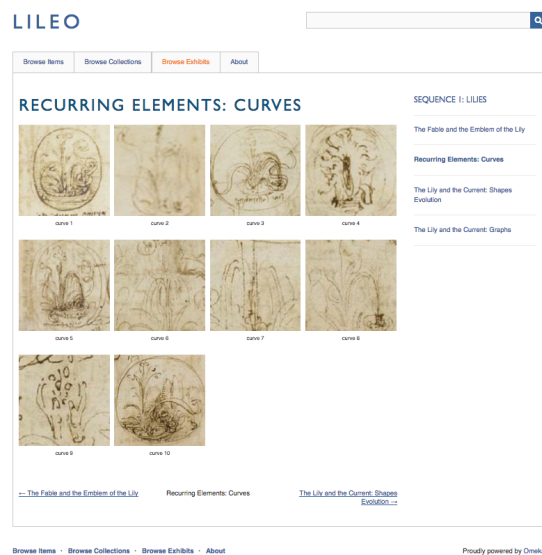
As part of my dissertation, I designed a diagrammatic model that combines an object-based approach with interdisciplinary research in the digital humanities to track the evolution of forms through different media and underline recurrent patterns in Leonardo's research. The material component of my work is a set of analytical drawing tables, which visually and textually translate Leonardo's manuscripts. Each table shows a reproduction of a sheet in its original size on which I layer two combinable tracing pages. The first page contains the transcriptions of Leonardo's notes featured in the original manuscript position, and readable from left to right. The second page concerns diagrammatic notes on recurrent aesthetic and scientific patterns, and visual and textual connections between different elements in the space of the manuscript. The identified diagrams are subsequently cataloged and analyzed as part of the Omeka web-publishing platform *LILeo*, which I created in collaboration with the Rutgers Digital Humanities Laboratory.



III

LILEO DIGITAL PROJECT

The web-publishing platform *LILeo* is composed of three basic sections. The first two sections—item and collection—serve to classify and organize the data according to their provenance. Items, visualized under the title of the manuscript or the book to which they belong, are gathered into collections that are named after the physical archives where they are preserved. The exhibit section is devoted to the analysis and interpretation of the data, concerning the evolution of Leonardo's fables into emblems, and the development of Leonardo's library holdings into his visual narratives.



It is possible to access *LILeo* at:
<https://blogs.libraries.rutgers.edu/lileo/>.