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Waxing Poetic: Anna Morandi Manzolini's Anatomical Sculptures

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The anatomical wax sculptures of Bolognese artist and anatomist Anna Morandi Manzolini manifest the intimate partnership between the systematizing eye and the probing hand that marks the Enlightenment worldview. Bridging what Barbara Stafford has judged the "untraversable abyss of the eighteenth century between the practical visual and the theoretical textual,"[1] Morandi's waxes conjoin the fine arts and surgery, sense and cognition, hands and eyes, to vividly render and theorize the workings of the human body. Resistant to the neoclassical aesthetic ideal as well as the canon of topographical anatomy, her sculptures and voluminous explanatory notes offer a new rendering of the "fabric of human bodies" that envisions each organ in terms of its vital function within the context of a dynamic, interdependent physiological whole. In this paper I aim to delineate Anna Morandi's little-known history and accomplishments, and to elucidate the unique body narrative and poetics of anatomical design that she inscribed in tinted wax.[2]

As with other illustrious women of her age, Morandi's contemporary authority and historical import were, until quite recently, all but dismantled. In the two centuries since her death, only about a dozen articles have treated her life and work, and these often contradict

1. Barbara Maria Stafford, *Body Criticism: Imaging the Unseen in Enlightenment Art and Medicine* (Cambridge: MIT Press, 1991), p. 53.

2. See Thomas Laqueur's theory of the transformation in the way the body was conceived and represented in the European Enlightenment in *Making Sex: Body and Gender from the Greeks to Freud* (Cambridge, Mass.: Harvard University Press, 1990), pp. 6–11.

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each other and present as fact unsubstantiated data.[3] Much of what is known about her has, in fact, come from writings focused on her less capable and less influential contemporary male counterparts. As regards extant wax models sculpted by Morandi, a significant number have been carefully restored and are housed in the Museum of Normal Human Anatomy of the University of Bologna. However, numerous sculptures, especially those commissioned by foreign patrons, have not been recovered, and still more remain out of sight in a state of extreme disrepair. In constructing this account, I have endeavored to indicate discrepancies among Morandi's biographers, to engage questions of attribution regarding her work, to narrow lacunae in her history when viable, but also to indicate those gaps that will not now be filled. Much in the same way that she has succeeded in evoking the whole, living person through her sculptures of incomplete faces, solitary eyeballs, and truncated hands, I hope to render the unique force and trajectory of her life and work despite fragmentary biographical data and the loss or damage of many of her sculptures.

In order to reconstruct Morandi's story, it is necessary to characterize the unique cultural context into which she was born in 1716. Her specific accomplishments as an anatomical wax modeler, a scientist, and a woman working in these male-dominated disciplines would most probably never have been realized outside Enlightenment Bologna. Two native sons, General Luigi Ferdinando Marsili (1680–1730) and archbishop of Bologna Prospero Lambertini (1675–1758), who in 1742 became Pope Benedict XIV, were principally responsible for fostering the reforms that distinguished the intellectual life of the city. Linked by their common devotion to modern experimental science and their ambition to return Bologna to its former

3. The following texts have provided essential biographical information about Morandi for this paper: Maurizio Armaroli, ed., *Le cere anatomiche bolognesi del Settecento* (Bologna: Università degli Studi di Bologna, 1979), pp. 33–64; Francesco Antonio Manzoli and Giovanni Mazzotti, *Il Museo di Anatomia Umana* (Milan: AIEP Editore, 1987), pp. 210–211; Michele Medici, *Elogio di Giovanni e di Anna Morandi coniugi Manzolini* (Bologna: San Tommaso D'Aquino, 1857); Marta Cavazza, "'Dottrici' e Lettrici dell'Università di Bologna nel Settecento," *Annali di storia delle università italiane* 1 (1997): 109–126; Londa Schiebinger, *The Mind Has no Sex? Women in the Origins of Modern Science* (Cambridge, Mass.: Harvard University Press, 1989), pp. 16, 28; Claudia Pancino, "Donne e scienza," in *La memoria di lei*, ed. Gabriella Zarri (Turin: Società Editrice Internazionale, 1996), pp. 98–101; Karen Newman, *Fetal Positions: Individualism, Science, Visuality* (Stanford: Stanford University Press, 1996), pp. 45–48; Carolina Bonafede, *Cenni biografici e ritratti d'insigni donne bolognesi* (Bologna, 1845), pp. 168–172; Vittoria Ottani and Gabriella Giuliani Piccari, "L'opera di Anna Morandi Manzolini nella ceroplastica anatomica bolognese," in *Alma mater studiorum: La presenza femminile dal XVIII al XX secolo* (Bologna: Clueb, 1998), pp. 81–93; Marcello Oretti, *Notizie de' professori*, MS B 133, pp. 227–231, Biblioteca comunale dell'Archiginnasio, Bologna.

status as "madre degli studi" (mother of studies),[4] Marsili and Lambertini effected in their native city a new era in scientific study that shaped and was shaped by the work of Anna Morandi.

In 1714, Marsili founded the Bolognese Istituto delle Scienze (Institute of Science), a research and teaching academy for the advancement of an "historia vera naturale"—a true natural history grounded in the rigorous scientific analysis and classification of natural phenomena.[5] The acme of Marsili's lifelong scientific ambition, the Institute originated in his Bolognese palace in via San Mamolo both as a scientific *studio* and as a repository for his vast collection of scientific instruments and texts and his exempla and taxonomies of sea and plant life compiled during his military career in the service of Emperor Leopold I.[6] With official sanction and funding from the Bolognese Senate, the Institute moved in 1714 to Palazzo Poggi where it became, as Marsili had designated, a center for the practice and teaching of modern science, collaborative with, but independent from, the university.[7]

Although Marsili died in 1730, well before Anna Morandi initiated her work in anatomy and anatomical design, the core intellectual and pedagogical ideals he had established with the founding of his "casa delle scienze" (house of the sciences)[8] continued to underpin the canon of scientific study during Morandi's lifetime. In the Institute, the theory and practice of mathematics, physics, astronomy, geography, and natural history privileged and sought to delineate the norms and the continuity in nature, in express opposition to the pursuit of the marvelous and the aberrant revered during the baroque age.[9] As a modern Bolognese scientist, Morandi would implicitly espouse in her work Marsili's approach of the "naturalista metodico," his tripartite method of "exposition," classification, and experiment—or, to use the transparent eighteenth-century Italian term, "experience" (*esperienza*)—to uncover the intrinsic order and

4. Lambertini refers to Bologna by its established epithet "madre degli studi" in a letter of January 1, 1746, cited in *I commentari dell'Accademia delle Scienze di Bologna*, vol. 1 of *Anatomie accademiche*, ed. Walter Tega (Bologna: Il Mulino, 1986), p. 31.

5. Marsili's term is cited in *L'Istituto delle Scienze*, vol. 3 of *Anatomie accademiche*, ed. Walter Tega (Bologna: Il Mulino, 1993), p. 119.

6. On Marsili's founding of the Institute, see John Stoye, *Marsigli's Europe, 1680–1730: The Life and Times of Luigi Ferdinando Marsigli, Soldier and Virtuoso* (New Haven, Conn.: Yale University Press, 1994), pp. 216–310.

7. *L'Istituto delle Scienze* (above, n. 5), p. 135.

8. Ibid.

9. On notions of the marvelous in early modern Europe, see Lorraine Daston and Katherine Park, *Wonders and the Order of Nature, 1150–1750* (New York: Zone Press, 1998).

underlying operations of nature, truths of practical use to the individual and the world.[10]

Marsili found in Prospero Lambertini his most important ally and successor for the defense of the intellectual mission of the Institute of Science.[11] Called from his post as Vatican librarian in 1726 and sent by the Holy See to arbitrate a conflict between the Bolognese Senate and Marsili over the management of Marsili's bequests to the Institute, and over patronage-based hiring practices for the academy fostered by the Senate,[12] Lambertini sanctioned scientific over political interests in the dispute and thus began a lifelong commitment to the cultivation of the academic prestige of his birthplace. When he returned in 1730 as cardinal archbishop of Bologna, he initiated an expansive development of the academic life of the city. At the Institute of Science he attended academic assemblies; he oversaw "the completion of the library . . . the enhancement and the new systematization of the laboratories and the natural history rooms,"[13] and the acquisition of new scientific instruments and apparatus to be used in teaching and research; and he authorized the nomination of prestigious new members to the academy. His most momentous reforms, however, acted to strengthen the study and practice of the medical sciences, especially anatomy—a focal point of Bolognese scientific culture since the thirteenth century.

Bologna's legacy in anatomy had been built by such scientific authorities as Mondino de Luzzi, who in 1315 became "the first European to really teach from a cadaver, and to do the dissection himself";[14] the microscopic anatomist Marcello Malpighi (1628–1694); and Anton Maria Valsalva (1666–1723), anatomist and author of the influential *Tract on the Human Ear* (*De aure humana tractatus*, 1704). To cultivate this legacy, Lambertini wrote several important decrees for the modernization and expansion of anatomical studies. On January 8, 1737, as archbishop of Bologna, he issued a *Notification*, "On the Anatomy to be done in public schools" (Sopra la Notomia da farsi nelle pubbliche

10. *L'Istituto delle Scienze* (above, n. 5), pp. 115–139.

11. On the pervasively misunderstood history of support by the Catholic Church for anatomical studies, see James J. Walsh, "The Popes and the History of Anatomy," *Medical Library and Historical Journal* 2 (1904): 10–29.

12. On this dispute, see Paula Findlen, "Science as a Career in Enlightenment Italy: The Strategies of Laura Bassi," *Isis* 84 (1993): 458; Stoye, *Marsigli's Europe* (above, n. 6), pp. 304–309.

13. "La realizzazione della bibiloteca . . . l'arricchimento e la nuova sistemazione dei laboratori e delle stanze di storia naturale": *I commentari* (above, n. 4), p. 24.

14. Rumy Hilloowala et al., eds., *The Anatomical Waxes of La Specola* (Florence: Arnaud, 1995), p. 10.

scuole),[15] narrowly interpreting Pope Boniface VIII's controversial bull *De sepulturis* of 1299 that had condemned on pain of excommunication anyone who exhumed, sectioned, or boiled the bodies of buried Christians. According to Lambertini, Boniface VIII had not intended for his proclamation to apply to the anatomical dissection practiced in schools, a scientific procedure deemed by Lambertini useful and necessary for the public good. At the conclusion of this "Notification," the archbishop mandated the unprecedented promotion of organ donation for anatomical research among the general populace:

> with this Our Notification we wish it to be known that when it does not regard cadavers of the condemned . . . but rather the cadavers of men or of women of any condition, dead by whatever other means of death, that are believed to be necessary for the Anatomy to be done in the public Schools, let a petition be made either to Us or to Our General Vicar, with assurance that, in order not to impede such useful work, all opportune measures will be taken for the consent of the relatives, for the right of the Parish, and for the Funeral Services.[16]

Anna Morandi's involvement in Prospero Lambertini's campaign to revitalize Bolognese scientific culture began indirectly in 1740 with her marriage to artist Giovanni Manzolini, whom she had met while studying drawing and sculpture in the studios of Giuseppe Pedretti and Francesco Motti. That same year, Morandi's husband began an apprenticeship with the renowned anatomical wax modeler Ercole Lelli, whose wax sculptures of a horse and a human kidney had inspired Archbishop Lambertini to propose to the Bolognese Senate the establishment of an anatomical museum in the Institute of Science.

In Italy the production of wax liturgical figures, Agnus Dei, and pagan ex-votos, (which commonly included models of human and animal organs) had been a flourishing industry since the Middle Ages; occasionally such figures can be found at provincial festivals even today.[17]

15. This document, which issued from the palace of the archbishop in the vernacular, was republished numerous times during the course of the century and was translated into Latin and Spanish: see G. Martinotti, *Prospero Lambertini (Benedetto XIV) e lo studio dell'anatomia in Bologna* (Bologna: Tipografica Azzoguidi, 1911), pp. 4–5.

16. "Con questa Nostra Notificazione facciamo sapere, che, quando non si tratti de' cadaveri di giustiziati . . . ma de' cadaveri d'uomini, o di donne di qualsivoglia condizione, morti di qualunque altra morte, che si credano necessari per la Notomia da farsi nelle pubbliche Scuole, se ne faccia o a Noi, o al Nostro Vicario Generale l'istanza, con sicurezza, che, per non impedire un'opera tanto utile, si prenderanno tutte le misure opportune e per il consenso de' Parenti, e per il diritto del Parroco, e per l'Esequie": ibid., p. 8. This and all subsequent translations are mine.

17. On the history of anatomical ceroplasty, see Luciano Bonuzzi and Franco Ruggeri, *Appunti preliminari ad un'indagine sulle cere anatomiche* (Padua: Piccin Editore, 1980); Hilloowala et al., *Anatomical Waxes* (above, n. 14), pp. 10–13, 45–49.

The wax statuette of *The Anatomy* made for bronze casting by sixteenth-century artist Ludovico Cardi, known as il Cigoli, and the gruesome waxes of the sectioned and putrefying human body sculpted during the baroque age by Sicilian artist Gaetano Zumbo (1656–1701) manifest the growing affiliation in Italy between ceroplasty and anatomical design.[18] However, it was the specialized and spectacular work of Ercole Lelli that defined the art of anatomical ceroplasty.

When Lambertini was made Pope Benedict XIV in 1742, among his first initiatives was to order the Institute to commission Lelli "to form, sculpt, and color in wax the complete myology and the osteology of the human body" for the foundation of the Institute's museum of anatomy.[19] Lelli hired Giovanni Manzolini in 1742 to assist in the sculpture of the immense papal commission, which included

> eight life-size sculptures, of which two were a male and a female nude, and six were écorchés of the human musculature; twenty representations of the muscles of the larynx, the pharynx, the eyes, the ears, and the generative system; skeletons one each of a male, a female, and a fetus; six tables representing all the segregate bones of the body; a single sculpture of the cranial and jaw bones detached; six tables of the large and small bones encased in their membranes; four tables of the cartilaginous parts of the body; four tables of sectioned bones; and two tables one each of the inner and outer ear.[20]

After a dispute in 1745 over acknowledgment for his work on the commission, Manzolini quit his collaboration with Lelli and opened an anatomical wax modeling studio in his home.[21] Anna Morandi began assisting her husband at this time, not only in the preparation and production of anatomical wax figures, but also in the study of human anatomy. Although little is know about the couple's collaboration, their combined expertise in anatomy, dissection, and wax modeling contributed an unparalleled level of accuracy to their representations of the human form, which in turn generated national

18. On Cigoli, see Marco Chiarini, *Lodovico Cigoli 1559–1613: Tra manierismo e barocco* (Fiesole: Amalthea, 1992); Faranda Franco, *Ludovico Cardi detto il Cigoli* (Rome: De Luca, 1986); Roberto Contini, *Il Cigoli* (Soncino: Edizioni del Soncino, 1991). On Zumbo, see Paolo Giansiracusa, *Vanitas vanitatum: Studi sulla ceroplastica di Gaetano Giulio Zumbo* (Syracuse: A. Lombardi, 1991); François Cagnetta, "La vie et l'oeuvre de Gaetano Giulio Zummo," in *Ceroplastica nella scienza e nell'arte* (Florence: Olschki, 1977), pp. 489–501.

19. Contract for Lelli commission of the Institute of Science, Archivio di Stato, Bologna (hereafter ASB), Assunteria d'Istituto, Diversorum, busta 10 (1742).

20. I have here paraphrased the terms of the commission found in ASB, ibid.

21. On the controversy between Lelli and Manzolini, see Massimo Ferretti, "Il notomista e il canonico: Significato della polemica sulle cere anatomiche di Ercole Lelli," in *I materiali dell'Istituto delle Scienze* (Bologna: Clueb, 1979), pp. 110–114.

and international interest in their work. The king of Sardinia, the Royal Society of London, and the procurator of Venice were among the couple's most prestigious patrons.[22] In 1746, Giovanni Antonio Galli (1708–1782), professor of surgery at the University of Bologna, commissioned the Manzolinis to sculpt in wax the original 20 of the more than 150 models of the gravid uterus and the female reproductive system used by Galli in the School of Obstetrics he opened in his home in 1753. (Although the commission was, according to several eighteenth-century biographers, assigned to Giovanni Manzolini alone, this in no way precludes Anna Morandi's participation, for she was, according to nearly all relevant biographers, her husband's accomplice in anatomical modeling.)[23]

Unlike the vast majority of their peers in the field of anatomical design—including Ercole Lelli, Giovanni Manzolini's chief rival in the art—the Manzolinis were not dilettantes in human anatomy, endeavoring to produce for art's sake aesthetic and verisimilar paragons of the anatomized body.[24] Several documents attest to their expertise and pivotal research in the anatomical sciences. The couple owned an extensive collection of prevailing classic and contemporary texts on biology, anatomy, and medicine, which served as primary resources for their anatomical studies and their wax interpretations of the body. Their library included such seminal works as Andreas Vesalius's *De humani cor-*

22. *Le cere anatomiche* (above, n. 3), p. 33.

23. Inconsistencies mark the account of the Galli commission among the Manzolinis' biographers. Giovanni Fantuzzi in *Notizie degli scrittori bolognesi* (Bologna, 1786), Francesco Maria Zanotti in the *Commentarii* of the Institute of Science (1755), and Luigi Crespi in *Felsina pittrice* (1796) attribute all of the more than 150 obstetrical models in wax and clay to Giovanni Manzolini alone. Marcello Oretti in *Notizie de' professori*, Biblioteca Comunale dell'Archiginnasio, Bologna, MS B 110, makes mention of some but not all of the other artists who worked on the commission: Antonio Cartolari (1701–1779) and Niccolò Toselli. Michele Medici records the statement of Carlo Bianconi on the subject and attributes only the first twenty wax models commissioned by Galli to the Manzolinis in "Elogio di Giovanni e Anna Morandi, coniugi Manzolini," *Memorie dell'Accademia delle Scienze dell'Istituto di Bologna* 8 (1857): 14. For a contemporary account of the wax models made for Galli by the Manzolinis, see Marco Bortolotti, "Il maestro alla lavagna: Il museo del Galli dall'inventario al catalogo," pp. 14–22; Claudia Pancino, "L'ostetrica del Settecento e la scuola bolognese di Giovanni Antonio Galli," in *Ars obstetrica bononiensis: Catalogo ed inventario del Museo Ostetrico Giovan Antonio Galli* (Bologna: CLUEB, 1988), pp. 24–31.

24. In "Il notomista e il canonico" (above, n. 21), Massimo Ferretti discusses the intense polemic among the contemporary biographers of Lelli and Manzolini over which of these was the more talented artist. Lelli's defenders consistently maintained that because he did not presume to be a scientist, he provided a more authentic and disinterested representation of human anatomy. It is clear from this wrought discourse that many believed it not only unsuitable but wrong for an artist to exceed his or her inferior intellectual station.

poris fabrica (1543) (Fig. 1), an Italian translation of Juan Valverde de Humasco's *Historia de la composición del cuerpo humano* from 1682, Marcello Malpighi's *De viscerum structura* (1666), an edition of William Cowper's *Anatomia corporum humanorum* published in Leiden in 1739 (Fig. 2), Anton Maria Valsalva's *Opera cum Morgagni* (Venice, 1741), and an Italian translation of François Mauriceau's *Traité des maladies des femmes grosses* (Cologne, 1668) (Fig. 3).[25]

The Manzolinis engaged with these and other texts on both a practical and a theoretical level. For example, while Mauriceau's and Hendrick van Deventer's analyses and illustrations of female reproduction and its associated pathologies served as chief references for wax models prepared by the couple for Galli's school of obstetrics,[26] Valsalva's study of the ear inspired not only numerous wax models of the human ear but also theoretical writings disputing certain inferences made by Valsalva about the ear's structure and design. In a relevant letter written in 1749 to the Benedictine Academy of the Institute of Science and read at a regular assembly of the academy in 1751, Giovanni Manzolini offered an original theory on the question of congenital deaf-mutism: after dissecting the head and neck of a thirty-three-year-old deaf-mute and noting a grave abnormality in the cochlea of the ear, while no aberrations appeared in the subject's speaking apparatus, he concluded that "those born without hearing do not speak only because they have never had the means to become conscious of sound itself."[27] Anna Morandi not only analyzed the anatomy and certain prevailing theories of the ear in her own work—disputing, for example, Johanes Augustus Quirinus Rivinus's theory of the "incisura tympanica" (a fissure in the eardrum)[28]—but, as will later be discussed, she made the sense organs a primary focus of her wax designs and her anatomical research.

Aside from mastering primary texts in the canon of anatomical studies, the Manzolinis also refined techniques of dissection in order to more accurately perceive and then portray in wax discrete components of the body. The household laboratory and classroom were common-

25. The inventory of Morandi's library, part of which I have cited here, is found in Biblioteca Universitaria, Bologna (hereafter BUB), MS 2193.

26. *Ars obstetrica bononiensis* (above, n. 23), pp. 69–95.

27. Cited in "Considerazioni di Giovanni Manzolini (1700–1755) sull'anatomia dell'orecchio in condizioni normali e patologiche," in *Estratto dagli Atti del XXVII Congresso Nazionale di Storia della Medicina* (Caserta, Capua, Salerno, September 12–14, 1975), pp. 3–8.

28. See Anna Morandi Manzolini, anatomical notebook, BUB, MS 2193, fols. 18–28, for her anatomy of the ear, and especially fol. 20 r–v for her criticism of Rivinus's theories on the structure of the eardrum. Under the direction of his father—Augustus Quirinus Rivinus (1652–1723), an internationally noted professor of physiology, botany, and medicine of the University of Leipzig—Johanes Augustus Quirinus Rivinus wrote a

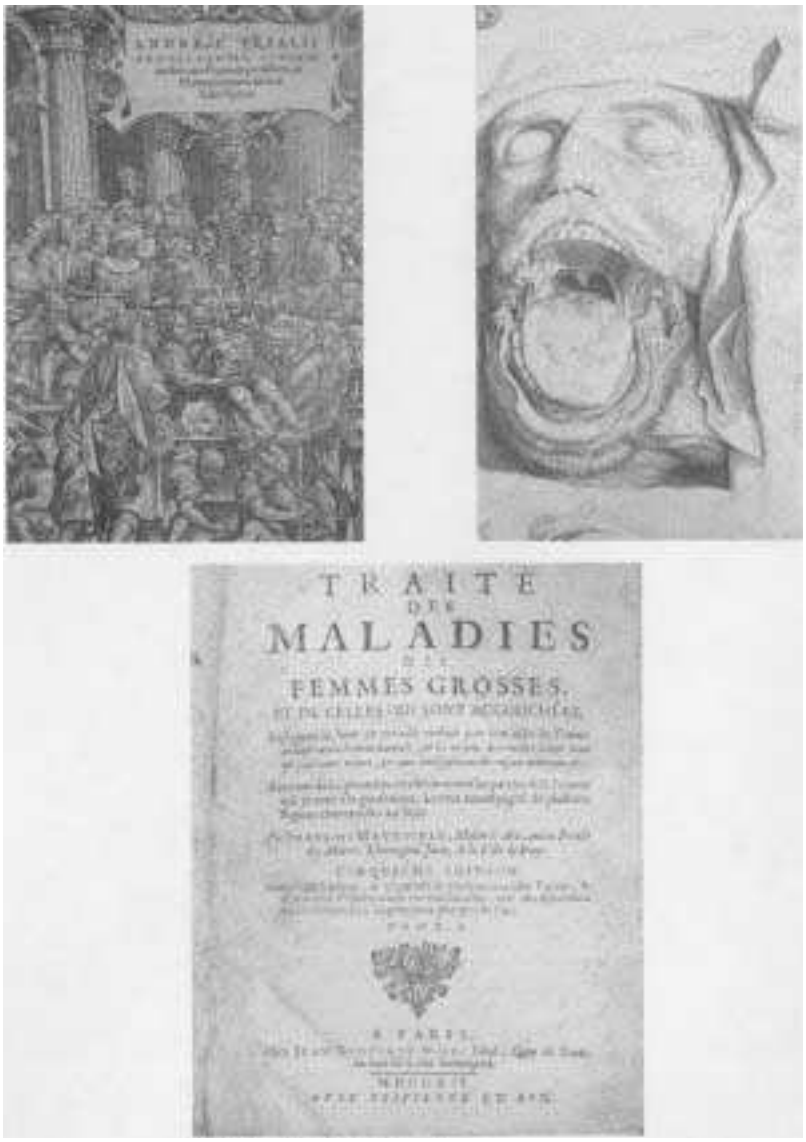

Figure 1. Title page, Andreas Vesalius, *De humani corporis fabrica* (Basel: Oporinus, 1543). (Courtesy of the Rare Book Archive of the Bernard Becker Medical Library, Washington University, St. Louis, Missouri.)
Figure 2. William Cowper, *Anatomia corporum humanorum* (Utrecht: Muntendam, 1750), plate 13, fig. 1. (Courtesy of the Rare Book Archive of the Bernard Becker Medical Library, Washington University, St. Louis, Missouri.)
Figure 3. Title page, François Mauriceau, *Traité des maladies des femmes grosses,* 5th ed. (Paris, 1712). (Courtesy of the Rare Book Archive of the Bernard Becker Medical Library, Washington University, St. Louis, Missouri.)

place in Bologna at this time, and Anna Morandi eventually gave dissection and anatomy lessons to medical students in her home.

Like many exceptional women of the age, however, Morandi's rise to public prominence was inadvertent. The sudden death of her husband in 1755 propelled the thirty-nine-year-old artist, anatomist, and mother of two from the periphery to the center of two cardinal and intersecting arenas of the Italian Enlightenment: art and science. Assuming control of the household modeling studio, Morandi applied her adroit artist's hand and expert knowledge of human anatomy to create the most technically advanced anatomical wax models yet seen. She sculpted meticulous facsimiles of the body for the express purpose of instructing surgeons and medical students in normal human anatomy. To this end, she developed superior wax compounds and methods of sculpture, as well as more precise techniques of human dissection. These innovations allowed her to depict anatomical traits never before visualized for the naked eye.

Morandi won near-instantaneous public acclaim as the most accomplished of the three Bolognese ceroplasts. In the year of her husband's death, Pope Benedict XIV awarded her a "lifetime annual stipend to be paid for expenses incurred from her studies and domestic needs."[29] In 1758, the internationally renowned Clementine Academy of the Arts in Bologna, part of the Institute of Science, inducted her into its ranks. Two years later, the Bolognese Senate conferred upon her the title of Chair of Anatomical Modeling at the University of Bologna, which carried with it an annual allowance and the right to conduct public and private lessons in dissection and wax modeling. Although several sources, including Morandi's contemporary biographer Marcello Oretti, assert that she was made an honorary member of the most acclaimed academic body in Bologna at the time, the Benedictine Academy of the Institute of Science, the absence of corroborating proof among the archival documents of the Institute leaves unresolved the question of her entrance into the ranks of the *accademici*.[30]

tract on the ear in which the theory of the "incisura tympanica" was introduced; the tract, *De auditus vitiis*, was published in Leipzig in 1717 and reprinted in Haller in 1749. I wish to recognize the help of Lilla Verkerdy in identifying references to Rivinus's work and for providing biographical information on him.

29. *Le cere anatomiche* (above, n. 3), p. 35.

30. Medici, in his *Elogio* (above, n. 3), p. 21, states: "venne accolta in quest'Accademia dell'Istituto delle Scienze, e nella *Clementina* di arti belle." Serafino Mazzetti makes the same assertion in his *Repertorio di tutti i professori della famosa Università* (Bologna, 1847), p. 218. Throughout her autograph, Morandi defines herself as "Accademica d'onore dell'Istituto delle Scienze di Bologna"; unfortunately, the Acts of the Institute of Science for the years when she would have been inducted as an honorary member are currently missing.

The immediate and ardent approbation conferred by the patriarchs of Bolognese civic, cultural, and religious life upon Morandi—a woman laying claim literally with both hands to that most virile science, human anatomy—obtained in part from the practice in Bologna of promoting scientific women. In seminal studies of female academics of the Italian Enlightenment, Paula Findlen has elucidated the primacy of learned women for the renewal of Bologna's academic prestige during the eighteenth century. Morandi's contemporary, Laura Bassi (1711–1778), who attained a degree in philosophy in 1732 from the University of Bologna (she was only the second woman in Europe to earn this distinction), was, in Findlen's words, "the symbol of scientific and cultural regeneration of the city";[31] she was made professor of natural philosophy at the university and eventually occupied the chair of experimental physics. By 1761, when Morandi accepted the chair of anatomical modeling, a second woman, Cristina Roccati, had been granted a degree in philosophy from the university, and Pope Lambertini had offered a teaching position at the university to a third woman, the internationally noted Milanese mathematician Maria Gaetana Agnesi. The pope also encouraged Agnesi to accept honorary membership in the Benedictine Academy of the Institute of Science, where Laura Bassi enjoyed preeminent status among the academicians for her lectures, scientific experiments, and expertise in Newtonian thought. The rare affiliation conceived among the potentates of Bolognese culture, especially Lambertini, between learned women and the academic currency and prestige of the city helped spur Morandi's ascent.[32]

Word of Morandi's genius spread throughout Italy and Europe, prompting numerous universities and academic institutions to invite her to lecture, and to commission from her specific anatomical figures. While she declined all invitations to visit, she created anatomical wax models for such eminent patrons as the Royal Society of London, the king of Sardinia, Doge Moccenigo of Venice, and Catherine the Great.[33] In 1765, the Bolognese senator Count Girolamo Ranuzzi reached an agreement with Morandi in which he was allowed to purchase for his private collection her wax models, surgical instruments, and library of anatomical texts in exchange for an apartment in his palace where she would live, work, and give lessons

31. Findlen, "Science as a Career" (above, n. 12), p. 449.

32. Ibid., pp. 441–469; Paula Findlen, "Translating the New Science: Women and the Circulation of Knowledge in Enlightenment Italy," *Configurations* 3:2 (1995): 167–206.

33. Michele Medici, *Compendio storico della scuola anatomica di Bologna* (Bologna, 1857), pp. 350–351.

in anatomy and anatomical sculpture.[34] It was here that Emperor Joseph II of Austria met with her in 1769.

After Morandi's death in 1774, her work continued to influence anatomical studies. The Bolognese Senate acquired her collection of wax models in 1776, placing them in the Anatomical Museum of the Institute of Science alongside Ercole Lelli's écorchés and Giovann Antonio Galli's obstetrical figures. Professors of anatomy teaching at the Institute, such as the renowned anatomist and electrophysiologist Luigi Galvani (1737–1798), persisted in using her models in their courses on human biology and anatomy; in fact, Galvani, who had likely collaborated directly with Morandi, honored her contribution to medical science in an oration given to the Institute of Science in 1777.[35]

Until recently, scholars have paid little regard to the bipartite composition of Morandi's oeuvre: her delineation of the human form in both written text and three-dimensional image. The artist/scientist compiled a 250-page notebook detailing the form and vital function of each component of the body portrayed in her wax tables. While some scholars have raised doubts about her authorship of this document, its authenticity is clear from the meticulous correspondence between written and visual texts, from references made to the notebook in Girolamo Ranuzzi's inventory of Morandi's anatomical *studio*,[36] and from Oretti's consideration of this "magnificent book" in his biography of Morandi.[37]

An eclectic, highly practical manuscript that undoubtedly served as a primary reference for her lessons on anatomy and anatomical design, the notebook indexes Morandi's anatomical figures and their component parts and offers concise, didactic explanations of the terms and the mechanics of human anatomy. For example, in her description of the table she sculpted illustrating the muscles that move the eye, she explains that

34. As indicated in the documents for the sale of Morandi's anatomical *studio* by Girolamo Ranuzzi to the Institute of Science (1776), Ranuzzi was motivated in part by fears that Morandi might either sell off her invaluable collection or move it with her to one of the many academic institutions in Italy and Europe that had offered her a position: ASB, Assunteria d'Istituto, Diversorum, busta 10. See also Medici, *Elogio* (above, n. 3), p. 17.

35. Luigi Galvani, *De manzoliniana supellectili* (Bologna, 1777). An Italian translation of the oration by Luciana Quadrelli is found in *Alma mater studiorum* (above, n. 3), pp. 94–103. I would like to acknowledge Massimo Zini, archivist of the Institute of Science in Bologna, for indicating a direct collaboration between Morandi and Galvani.

36. ASB, Assunteria dei Magistrati Affari Diversi, vol. 3, parte 1, busta 78.

37. Marcello Oretti, *Notizie de' professori dell'arte del Disegno*, vol. 12, Biblioteca Comunale dell'Archiginnasio, Bologna, MS B 134.

> [t]he human eyeball is furnished with six muscles, which take their names from the directions in which they move and from their different uses. Of these six muscles, four are recti and two are obliqui. Of the four, the first is called elevator. . . , the second depressor . . . , the third abductor . . . , the fourth abductor or indignator. The two obliqui, that is, the one superior and the other inferior, are both called amateurs, but the superior is also called trochlea.[38]

Divided into ten sections, the notebook manifests the focus of Morandi's anatomical studies. The first five sections study her preferred subject, the sense organs: the eye, the ear, the nose, the tongue, and the hand. Other sections describe and analyze the muscles of the face; the larynx and pharynx; the arm, leg, and foot; and a variety of immature skeletons. Undeniably, most remarkable are the fifty-seven pages and twenty-two wax figures that elucidate the male reproductive system.

Despite the loss or poor condition of Morandi's sculptures of the male sexual organs, all of which have been excluded from the exhibit of her oeuvre at the Anatomical Museum of Bologna, they are profoundly significant for the ways in which they complicate and extend notions of power, subjectivity, and gender with respect to eighteenth-century visions of the body. While historians and gender scholars such as Ludmilla Jordanova and Elaine Showalter have enhanced our understanding of the violence, both real and symbolic, performed against women during the "Era of Uncovering"[39] by male anatomists, scientists, and artists, insufficient attention has been paid to the authority and penetrating gaze of the female anatomist, scientist, and artist of this same era, who probed literally and figuratively the enigmatic matter of human sexuality.[40]

Among the most original and intriguing recent studies of the history of sexuality to focus special attention on the wax anatomical design practiced in Enlightenment Bologna is Karen Newman's *Fetal Positions:*

38. "Il globo dell'occhio umano è fornito di sei muscoli li quali prendono i loro nomi dalla direzione che tengono e ancora dai loro diversi usi. Di questi sei muscoli, quattro sono li retti e due li obliqui. Dei quattro il primo si chiama Elevatore . . . il Secondo depressore . . . il terzo adduttore . . . o indignator. Gli due obliqui cioè l'uno superiore, l'altro inferiore, si chiamano tutti e due Amatorj; ma il superiore dicesi ancora Trocleatore": Morandi notebook (above, n. 28), fol. 5 v. Original grammar and spelling retained here and in subsequent citations.

39. Stafford, *Body Criticism* (above, n. 1), p. 24.

40. Ludmilla Jordanova, *Sexual Visions: Images of Gender in Science and Medicine between the Eighteenth and Twentieth Centuries* (Madison: University of Wisconsin Press, 1989); Elaine Showalter, *Sexual Anarchy: Gender and Culture at the Fin de Siècle* (New York: Viking, 1990). Mary Sheriff offers an important general analysis of the common flaws of feminist interpretation of female objectification in the art and science of the eighteenth century in *The Exceptional Woman: Elisabeth Vigée-Lebrun and the Cultural Politics of Art* (Chicago: University of Chicago Press, 1996), pp. 30–32.

Individualism, Science, Visuality. The author pursues the origins of certain contemporary notions and modes of representation of the "female reproductive body" and the human fetus among anatomical models of the past, including the wax figures made by the Manzolinis for Galli's obstetrical museum. In the preface and conclusion to her study, Newman sharply contrasts her constructivist method of historical analysis with that of cultural critics who fail to do "the hard work of understanding the past."[41] However, although, she briefly refers to Morandi's work and includes a picture of Morandis' self-portrait in the body of her text,[42] unfortunately she offers no consideration of the Manzolinis' background and anatomical enterprise, nor any analysis of Anna Morandi's unique position and contribution to conceptions and representations of the female as well as the male reproductive body. Morandi's prolific visual and written narratives of male and female generative physiology merit distinct and extensive analysis, and are therefore the subjects of a separate article I am currently writing.

Morandi's anatomical notebook inventories the parts and structures of the body illustrated in her wax tables—yet, unlike the conventional anatomical atlas, it does not function merely as an auxiliary written transcription of the primary visual image: in her written narrative, she also delineates her anatomical discoveries, her method of dissection and visual analysis of her subjects (which included the use of a microscope), and her corrections of erroneous anatomical theories.[43] In contrast to the bulk of academic writing by her female contemporaries, Morandi ignores the constraints of feminine discourse: the requisite humility, intellectual self-deprecation, and oblique opposition to authority.[44] Indeed, she underscores her expertise in both the practice and theory of this science by unabashedly expounding the terms of anatomical discourse; by engaging and critiquing the work of such patriarchs of anatomy as Vesalius, Galen, Morgagni, Malpighi, and Valsalva; and finally, by claiming her place among the masters of this science. In her description of the oblique inferior muscle of the eye, for example, Morandi states:

> This [muscle] not only attaches to the nasal apophysis of the maxillary bone, as all the authorities agree, but when the bone is cut, one sees that the muscle

41. Newman, *Fetal Positions* (above, n. 3), p. 2.

42. Ibid., pp. 46–47.

43. See Pancino, "Donne e scienza" (above, n. 3), p. 100; *Le cere anatomiche* (above, n. 3), p. 56.

44. On the conventions of feminine discourse of the Italian Settecento, see Rebecca Messbarger, "'Double-Voiced Discourse': A Study of an Eighteenth-Century Italian Woman's Magazine," *Italian Culture* 12 (1994): 125–137.

continues and attaches itself to the lacrimal sac. This was discovered by me during my operations, and I have found it to be consistent.[45]

In order to gauge accurately the extent to which Morandi redefined the purpose and technique of anatomical wax sculpture, it is necessary to consider the work of Ercole Lelli, her foremost precursor, who had set the standards for the art with the extensive series of wax figures he made (with the assistance of Morandi's husband) for the Institute of Science.[46] In imitation of the idealized representation of the anatomized body codified in such master atlases as those of Vesalius, Valverde, Eustachi, and Bartholin, Lelli's series shows an overarching interest in the aesthetics of the human form. For Lelli, the body proved an insufficiently artistic subject, one that he was compelled to transcend. His anatomical series illustrates incrementally, from shallow to deep, the body's musculature and bone structure; however, an embedded, synchronous narrative of the demise of the soul overwhelms his scientific rendering of the body.

Adam and Eve lead the ranks of Lelli's anatomical figures (Fig. 4). The whole, naturalistically colored male and female nudes, placed in classical *contrapposto*, evince their disgrace through suppliant facial expressions and posture and epitomize the neoclassical aesthetic ideal. They serve to provide a striking contrast, physical as well as metaphysical, to the dissected figures that follow. Next to Adam and Eve stand two sets of *scorticati*, or flayed men (Fig. 5), that display respectively the surface and deep musculature. Yet, like the nudes, the *scorticati* are not unifunctional, but serve both aesthetic and scientific ends: while posed to emphasize distinct muscle groups and bones, the eviscerated figures emphatically incarnate the state of final damnation through facial expressions, posture, and gestures of abject fear and despair. Lelli's *tableau mort* concludes with images of the grim reaper, two

45. "Questo [muscolo] non solamente si attacca all'Apofesi nasale dell'oso mascellare, come accordano gl'autori ma tagliato l'oso si vede, che il muscolo prosiegue, e va' ad attaccarsi al sacco lacrimale. Il che è stato da me scoperto nelle mie operazioni e l'ho ritrovato sempre costante": Morandi notebook (above, n. 28), fols. 7–8v.

46. Ercole Lelli (Bologna, 1702–1766), originally a gun maker, had studied drawing, design, and sculpture with several local artists before turning his attention to anatomical sculpture. In 1734 he sculpted in wood two écorchés for the restoration of the anatomical theater of the University of Bologna, and in 1739 he created from colored wax his acclaimed human kidneys. As has been discussed, these early works inspired the abid4ing patronage of Prospero Lambertini; the pope in 1747 appointed Lelli the custodian of the Anatomical Museum of the Institute of Science. On Lelli see *Le cere anatomiche* (above, n. 3), pp. 30–32; Manzoli and Mazzotti, *Il Museo di Anatomia Umana* (above, n. 3), pp. 207–209; Harvey Cushing, "Ercole Lelli and His Écorché," *Yale Journal of Biology and Medicine* 9:3 (1937): 199–213; Michele Medici, *Elogio d'Ercole Lelli* (Bologna: San Tommaso d'Aquino, 1856).

skeletons brandishing sickles in their bony grasp. Undoubtedly at work here is the notion, conventional at the time, that dissection served as a final recompense exacted on the body of the condemned, who, not surprisingly, were the most common organ donors (though the term "donor" is in this case euphemistic at best). Thus, the viewer of Lelli's allegorical écorchés is not summoned to act primarily as scientist, but rather as spectator to a public execution, participating simultaneously in the divine gaze that looks from on high in final judgment upon this cast of the fallen, and in the gaze of naked despair worn by the doomed themselves.

In contrast to Lelli's visual allegory for human mortality, Morandi seeks to represent exclusively the composition and vital force of the living body. Lelli's attempt to exceed the vulgar material of the human form by rendering it a metaphor for the human condition fixes him firmly within the memento mori tradition. Supplanting the spectacular with the specular, Morandi departs radically from this approach. Her wax figures realistically depict the structural complexity of animate limbs, organs, muscles, and bones, and serve to evoke not fear and pathos but scientific wonder. She aims to show in graphic and accurate detail the glands, nerves, veins, and fibers lost in Lelli's more grandiose imaging of the body. Yet, despite these fundamental differences in their objectives, Morandi adheres to the same canon of anatomical representation heeded by Lelli, systematically denuding, from exterior to interior, the multitudinous parts and myriad strata of the human body until she reaches its skeletal core. In the notes she prepared to accompany her wax models of the arm, Morandi plainly articulates her methodology:

> after depicting in the first table a natural arm detached from the trunk (Fig. 6), from which you will observe those veins that are most conspicuous, these, which appear again in the second table (Fig. 7), are stripped of their exterior coverings [teguments]. Here, one notes the muscles and those parts that remain visible. Then, successively, in the tables that follow, the external muscles are removed that had already been seen in situ and superimposed, in order to uncover and observe those beneath. This same order is maintained in all of the tables until the bones have been entirely exposed (Fig. 8).[47]

47. "Doppo essersi dimostrato nella prima tavola un braccio al naturale reciso dal tronco e notatevi quelle vene le quali sono più notabili, e più appariscono nella seconda tavola si spoglia de suoi integomenti, e vi si notano li muscoli e parti che riman gono visibili, e poi di mano nelle seguenti tavole si levano li muscoli già veduti in sito, e sovraposti per iscuoprire e notare li sottopostivi: tenendosi in tutte le tavole detto ordine sino al totale scuoprimento dell'ossa": Morandi notebook (above, n. 28), fol. 33v.

Figure 4. Wax models, *Adam and Eve* by Ercole Lelli. Bologna, Museo di Anatomia Umana Normale. From Franco Ruggeri, "Il Museo dell'Istituto di Anatomia Umana Normale," in *I Luoghi del Conoscere* (Milan: Cinisello Balsamo, 1988), p. 2, fig. 3. (Reproduced with permission of Marco Ravenna, Correggio, Italy.)

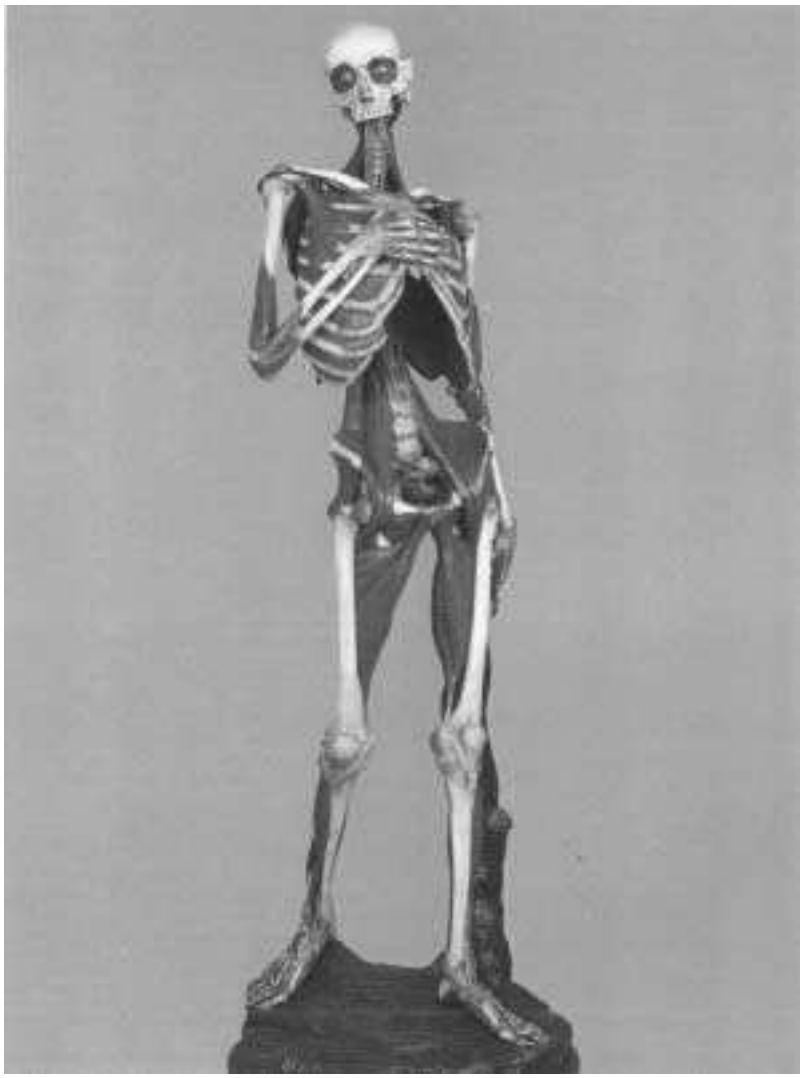

Figure 5. Wax *Écorché* by Ercole Lelli. Bologna, Museo di Anatomia Umana Normale. From Francesco Antonio Manzoli and Giovanni Mazzotti, *Il Museo di Anatomia Umana* (Milan: AIEP Editore, 1987), p. 206, fig. 5. (Courtesy of AIEP Editore, Milan, Italy.)

Figure 6. Wax *Forearm* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale.

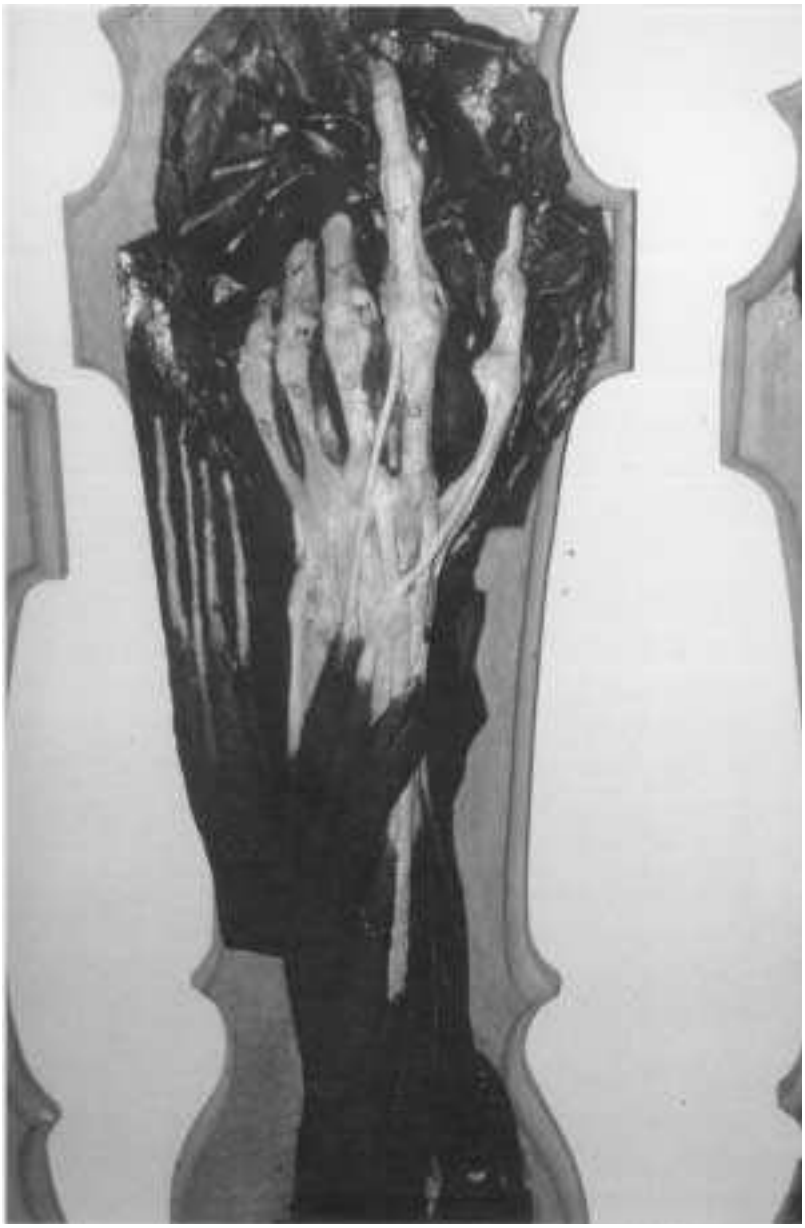

Figure 7. Wax *Series of Forearms* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale.

Despite Morandi's conventional method of representation, her work and writings exceed the confines of both traditional anatomy and anatomical design. She moves beyond topographical anatomy into the more complex sphere of modern physiology by focusing on the dynamic function of organs, as opposed to simply identifying their placement and structure.[48] She scrutinizes the ear for what it will disclose about the sense of hearing, the hand for what it reveals about the sense of touch, and the parts of the eye for the ways in which they facilitate sight. She simultaneously visualizes and theorizes links between the body's various structures—osteological, myological, neurological, cardiovascular, lymphatic, and the like—in order to locate the operation and the site of convergence of life-matter.

Although Morandi does not explicitly join the vigorous epistemological discourse of the Enlightenment, she seeks to elucidate in text and image the physiology of human perception. Not surprisingly, she specifically fixes on the hand and the eye, those organs essential for dissection, sculpture, and a direct knowledge of the material foundations of human existence. Likened by Plato and Aristotle to none other than a block of wax upon which are directly stamped our impressions of objects, sensory perception becomes during the era of the "new" science and philosophy a contested medium for knowledge of the external world. At the heart of the philosophical and scientific inquiries of such "moderns" as Descartes, Locke, Newton, Berkeley, Hume, and Kant is the question of the function and limitations of sensibility for cognition.[49] While Morandi is expressly concerned with sensory vision and kinesthetic perception, her interpretations of the body's experience of and reactions to the external world have indisputable implications for the broader question of the science of the mind. The remainder of this study therefore focuses on her representations of the hand and eye.[50]

The first twenty-seven pages of Morandi's anatomical notebook inventory and explain her prolific sculptures of intact and systematically disintegrated eyes. She sets atop tiny wooden pedestals seeing eyes that gaze from partial, though vital, human faces (Fig. 9). These serve to depict the living eye functioning naturally within its

48. *Le cere anatomiche* (above, n. 3), p. 56.

49. See Krzysztof Pomian, "Vision and Cognition," in *Picturing Science Producing Art*, ed. Caroline A. Jones and Peter Galison (New York: Routledge, 1998), pp. 211–232.

50. I was influenced by Maurizio Armaroli's aesthetic interpretation of Morandi's waxes, in particular his discussion of the real and conceptual interplay between the hand and eye, in *Le cere anatomiche* (above, n. 3), pp. 41–64.

Figure 8. Wax *Series of Forearms* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale.

Figure 9. Wax *Eye* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale.

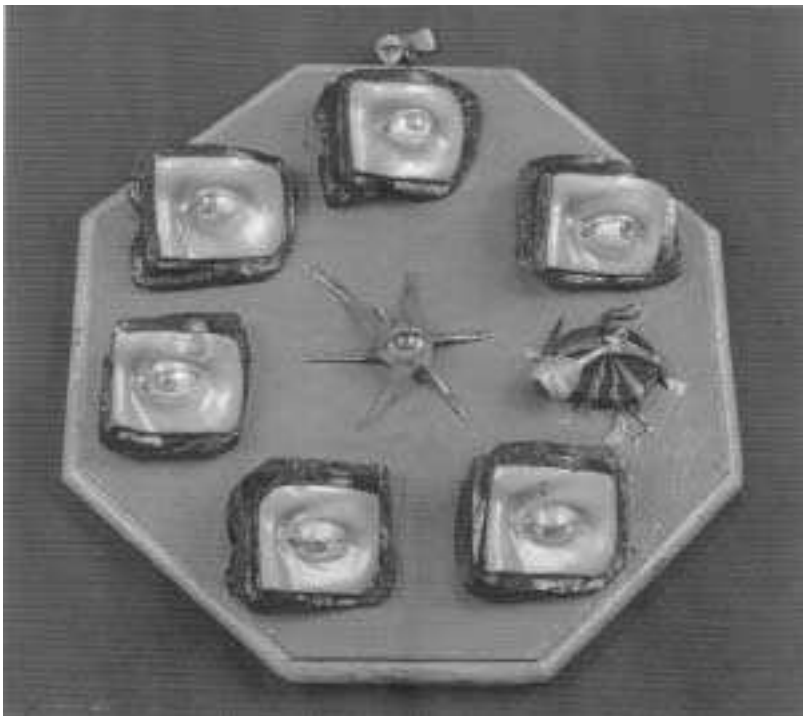

Figure 10. Wax *Extrinsic Muscles of the Eye* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale. From Francesco Antonio Manzoli and Giovanni Mazzotti, *Il Museo di Anatomia Umana* (Milan: AIEP Editore, 1987), p. 208, fig. 8. (Courtesy of AIEP Editore, Milan, Italy.)

orbit. Arranged on numerous octagonal tables like numbers on a clock face, whole as well as extricated eyes also peer decisively in different directions, demonstrating the eye's range of motion (Fig. 10). Other octagonal slabs display dissected lids, corneas, retinas, tear ducts, glands, and the muscles and nerves that surround the eyes (Fig. 11).[51] These dynamic images not only show the parts and organization of the eye, but also theorize, albeit rudimentarily, how the eye moves, tears, and sees. For example, when describing the lachrymal gland, Morandi highlights the practical anatomical functions of this component of the eye:

> At the ciliary puncta, located at the top of the grooves at the internal part of the tarsi, there are openings or excretors of the sebaceous gland of a bilateral

51. Based on Anton Maria Valsalva's *De aure humana tractatus* (1704).

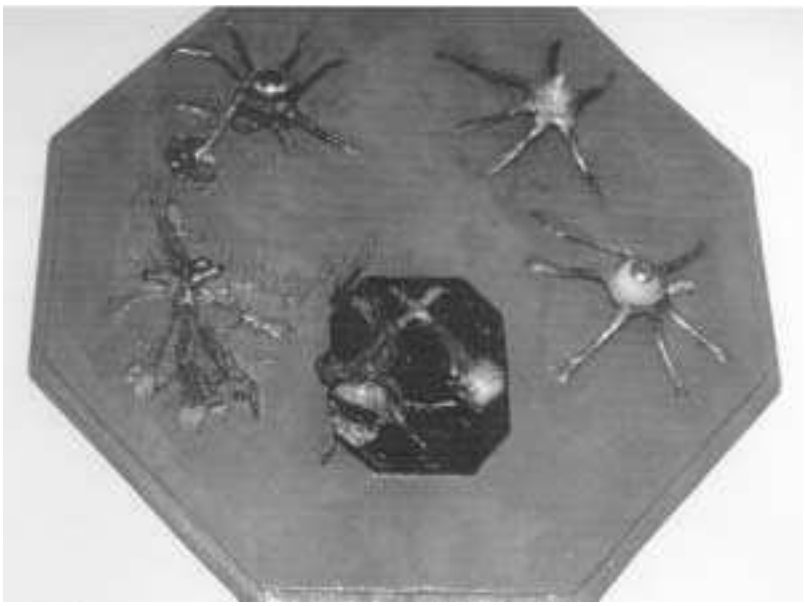

Figure 11. Wax *Muscles of the Eyeball, Muscle of the Superior Eyelid, Optic Nerve* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale.

> form which serve that lymph that facilitates the movement of the lid and maintains the moistness of the eyeball.[52]

Plainly implicated in Morandi's representation of the mechanics of sight is the artist/scientist's own penetrating vision. Both specular and mnemonic, the realistic wax eyeballs not only replicate and return the viewer's gaze, they implicitly recall the original visionary, Morandi, who held and beheld these gaping eyes. The ordered breakdown of the body, in this case the eye, into ever more particularized figures summons to mind the delicate cooperation between the scalpel interrogating the body's incalculable layers and parts and the anatomist's eye that must at once discern and isolate each discrete body component as well as conceive of the biological macrocosm into which these components fit—a convergence of sensory and intellectual vision. Yet, Morandi's wax facsimiles sublimate the very process they serve to evoke. It is the artist's prophetic eye that

52. "Punti cigliari in capo alle scannellature alla parte interna dei Tarsi, Sono li fori, o escretori delle Glandole Sebacee di forma bislonga, che somministrano quella Linfa la qual rende più agevole il moto delle Palpabre, e mantiene Lucido il Globo dell'Occhio": Morandi notebook, fol. 5v.

sees beyond the putrid, indistinct fluids and tissues of the cadaver in order to visualize pristine, transparent, animate organs, appendages, and their sequentially ordered parts.

In contrast to the traditional subordination of the mechanical to the intellectual arts, however, Morandi does not privilege the conceptualizing powers of the eye over the kinesthetic functions of the hand. Both in her wax models and in her scientific writings, she theorizes a perceiving hand possessed of memory and insight that performs a function complementary to sight and equal in status. In the notes that introduce her series of waxes showing the hand in progressive stages of disclosure, she explains that the subject of the tableau is, in fact, the sense of touch:

> Although, generally speaking, the sense of touch permeates the entire human body, being each part possessed of it and furnished with many nerve fibers that render it sensitive to any contact with a foreign object and, in accordance with the delicacy or the harshness of that object which surprises it, cause it to react and move, yet, even more properly does this sense reside in the hand. And to the hand is this sense attributed, as that organ which is most copiously possessed of and furnished with papillae and densely woven nerve filaments, such that whatever object presents itself to the hand for examination of its tangible qualities, nature immediately permits the hand, of all the anatomical members the most capable and sincere judge, to evaluate it.[53]

Morandi visualizes the dynamic and complex physiology of the sense of touch through representations of the left and the right hand at the climactic moment of contact with a foreign body (Fig. 12). As stated in her notes, the figure shows the left hand as it "comes to rest upon a surface that it finds soft and tender, and to which it suavely adapts itself, compressing it with delight,"[54] while the right hand is shown recoiling in pain after sudden and unexpected contact with a thorny branch (now lost). These allusive images defy the precision

53. "Benchè il senso del tatto generalmente preso, covenga a tutto il corpo umano, essendo ogni parte di esso corredata, e fornita di molte fibre nervee, che la rendono sensibile a qualunque tocco di corpo straniero, e secondo la delicatezza, o asprezza di ciò che la sorprende, si risenta, e muova; Tutta via più propriamente si ripone nella Mano, e a lei si attribuisce, siccome quella, che è più copiosamente fornita, e corredata di Papille e filamenti nervei densamente intessuti: perloche vediamo, che a qualunque oggetto, che ci si presenta ad esaminarne le qualità tangibili subito la natura vi premette la Mano, come più d'ogn'altro membro Giudice atto, e sincero a formarne il giudicio. Dunque nell'esporre il Senso del Tatto mi si farà ragione se lo espongo, e dimostro nella preparazione della Mano": ibid., fol. 50r.

54. "Si posa sopra d'un piano, che ritrovato da lei molle, e tenero soavemente vi si addatta, e con diletto lo comprime": ibid., fol. 51v.

Figure 12. Wax *Hands* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale.

and fixity of traditional science. Indeed, the highly suggestive complementary description of the distressed right hand deviates from the disinterested rhetoric typical of the notebook:

> With this, one hopes to signify the opposite sensation of the first [hand], that is, one that is sharp and harsh. Being that the object touched possessed a nature opposite to that of the hand, it woke in the latter disgust, and horror for this opposition and antagonism . . . , irritating with furor the nerves, whose greater numbers cause them to feel more intensely and cause the hand to suffer a more painful irritation.[55]

Morandi represents the body as experience (a term that, as was mentioned previously, signified during the Settecento both lived reality and scientific experiment) and, I would add, visually manifests what Italo Calvino has termed the "corporeal imagination,"[56] cognizance and memory rooted in the senses. Through artistic imagina-

55. "Con questa si pretende di significare la sensazione alla prima opposta, cioé l'accerba, ed aspra; essendoche l'oggetto tocato di natura contrario alla mano l'ha svegliato in essa il ribrezzo, e l'orrore . . . e irritando con furore li nervi, li quali in maggiore quantità ritrovandosi, maggiore fanno a sentire, e più doloroso l'irritamento sofferto alla mano": ibid., fol. 51r.

56. Italo Calvino, *Six Memos for the Next Millennium* (Cambridge, Mass.: Harvard University Press, 1988), p. 82.

tion and scientific technique, Morandi resuscitates the limp, colorless, dissected hands of a cadaver, transforming them into realistic, corporeal manifestations of pleasure and pain. Her own corporeal imagination allows her to re-member in wax intact, reactive fingers that act as synecdoches for the whole, living and feeling body. She creates a compound metaphor for subjective corporeality and empirical science. The scientist is quick to restrain these evocative signs through her analytic method of representation and interpretation. With words and image she pinpoints the anatomical design enabling the sense of touch. In her notes, she explains that nature concentrates nerve endings in the hand in order to signal the appropriate response to the external environment. A series of five meticulous wax figures succeed the two "feeling hands," peeling away, layer by layer, their intricate structure until they reach bone (Fig. 13).

It is important to note that nature, a frequent protagonist in Morandi's anatomical notebook, denotes, as in the case above, the organizing force of human biology. Indeed, nature would appear to supplant a divine being, to which Morandi makes no reference, as the creative and ingenious agent of life-matter. In her description of the hand, when she refers to the nerves of the fingers, for example, she states:

> All of these aforementioned nerves continue to the summit and apex of the fingers, and here they multiply into very copious and minute branches, more than in any other part of the body, and thus, this fecund multiplication of nerves operated by nature, renders the sensation more acute and delicate here than anywhere else.[57]

In Morandi's anatomical descriptions, nature "operates," "destines," "confers," "makes," "perfects," even "deprives" the parts and processes of the body. Indicative of a mechanistic cosomology, these references to nature presume a rational, material, and ultimately knowable reality—traits, however, that in no way diminish the magnificence of substantive truths or efforts to unveil them. Indeed, as in the case above, references to nature most often appear in sections of the notebook where the author yields to more subjective and laudatory descriptions of the body's structures and operations.

It is Morandi's wax self-portrait that manifests in the most transparent terms her vision of the power of the hand and its ideal alliance with the eye (Fig. 14). The ornate apparel and jewelry of this imposing facsimile prove only a momentary distraction from the

57. "Tutti costesti Nervi accennati si portano sino alla sumità, ed apice delle Dita e qui si multiplicano in Copiosissimi, e minutissimi Ramoscelli più che in altra parte, e quindi per tale, e sí feconda multiplicazione de nervi operata dalla natura, si rende più acuta che altro: ve, e delicata la Sensazione": Morandi notebook, fol. 52r.

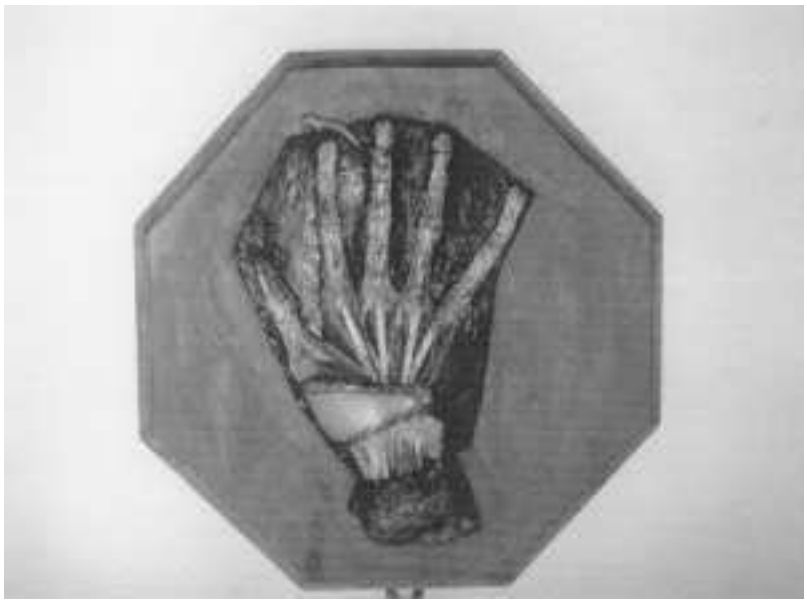

Figure 13. Wax *Anatomical Preparation of the Hand* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale.

primary focus of the portrait, Morandi's dissection of a human brain.[58] Staring thoughtfully forward, the woman scientist prepares to penetrate the seat of human intellection with the scalpel (now lost) in her left hand. Suffused with symbolism, the effigy reveals the complex relationship between Morandi's scientific object, her gender, and her art. She represents that climactic moment at which her discerning hands take possession of the body's master organ and dispatch substantial and immediate truths to the abstracting eye. Although she has erased from her self-portrait all vestiges of her artistic identity, the graphic realism of the image itself confirms her artistry. It is the disjuncture between her wax simulacrum and her anatomical figures, however, that most clearly elucidates her art. Unlike the myriad representations she created of living eyes, hands, mouths, and even bones, the brain, set on the wooden dissection table before Morandi's self-replica, is inanimate. An indistinct mass of neural tissue, the spent organ emerges from a rough triangular

58. Mary Sheriff provides an illuminating analysis of the relationship between attire and the status of the artistic enterprise in self-portraiture in *Exceptional Woman* (above, n. 40), p. 206.

Figure 14. Wax *Self-portrait* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale.

Figure 15. Detail of Wax *Self-portrait* by Anna Morandi. Bologna, Museo di Anatomia Umana Normale.

opening in a skull whose defunct humanity is made plain by the tufts of human hair that still cling to it (Fig. 15). This depiction at once highlights Morandi's personal refinement, her femininity, and the indelicacy of her scientific work: her penetration of the dead body.

Exhibiting her scientific method, her tools and technique, the self-portrait aims to immortalize Morandi's contributions to science and, more specifically, to the study of human anatomy. Her singularity in the scientific world is further reinforced by the juxtaposition of her self-portrait with an accompanying portrait she sculpted of her husband, Giovanni Manzolini. Shown in the act of dissecting a human heart, the male anatomist places his hand directly on the celebrated seat of passions—an organ essential to life but, for the new, enlightened science, subordinate to the brain, the unifying center of the body "that transmitted thought, feeling and volition."[59] It is little wonder that Catherine the Great commissioned Morandi to sculpt for her palace a copy of this self-portrait that so poignantly

59. Max Neuburger, *The Historical Development of Experimental Brain and Spinal Cord Physiology before Flourens*, trans. Edwin Clark (Baltimore: Johns Hopkins University Press, 1981), p. 189.

defies standard preconceptions about the position of women with respect to science, reason, and authority over the body.[60]

Morandi's overt suppression of her artistic identity in her self-portrait betrays the partiality of both artistic representation and anatomical science. As in her containment of the complexities of the human body through sequential, sanitized images of its parts, she streamlines this sign of herself. Yet, the self-portrait also shows the power of the part to evoke the whole. This representation of herself as scientist inevitably summons a mental image of Morandi the artist laboring with eyes and hands to revitalize with tinted wax the lifeless bodies laid out on her marble slab. Her self-portrait implicitly conveys the imaginative distance she traveled to render the living body.

Underlying scientific representations of the body during the taxonomic age was the belief that explicit knowledge of the composition and mechanics of human matter would lead to an understanding not only of life-matter but of the very structure and nature of reality itself. As Barbara Stafford has eloquently stated, "the human body represented the ultimate visual compendium, the comprehensive method of methods, the organizing structure of structures."[61] The anatomical wax sculptures of Anna Morandi manifest and transcend the poetics of this new body narrative. As she represents it in her bipartite inquiry, human anatomy is a microcosmic schema of an ordered, intricate, and knowable nature. Yet, with their focus on the function and organized integration of the body's parts, on the dynamic relation of human physiology to the external environment, and on the authority of sensory cognition, her waxes also offer a visual prologue to Judith Butler's thesis that it is impossible to "fix bodies as simple objects of thought" because they "indicate a world beyond themselves."[62] Morandi's work enacts a unique coalescence of numerous worlds and conceptual fields: life and death, art and science, sense and cognition, word and image, body and mind.

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60. Catherine the Great speaks of her copy of the self-portrait in a letter to Grimm of April 15, 1776. I wish to acknowledge Sergei Karp for telling me of the existence of this text.

61. Stafford, *Body Criticism* (above, n. 1), p. 12.

62. Judith Butler, *Bodies That Matter: On the Discursive Limits of Sex* (New York: Routledge, 1993), p. ix.

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