

## IMAGING AND IMAGINING THE BODY AS TEXT

Representations of the body, both artistic and scientific, are pervasive in our everyday lives. They engage us in an ongoing dialogue about self and identity. Viewing these images forces us not only to examine the intent of the image makers but also the intended function of the image. It provokes us to explore our contemporary understanding of the human body within the contexts of the history of anatomical representation and the advancements of science and medicine.

The human body has long been a source of inspiration and inquiry for artists and scientists, and, as anatomical beings, we are drawn to and identify with the human form. This anatomical instinct is embedded in our brains and defined by a collective cultural identity of the body that has been developed, refined, and refigured over the history of anatomical representation.

As an exploration of human morphology, anatomy is more than an exercise in understanding the structure of the human body: it is a form of self-reflection. Created by artists at the behest of anatomists, the knowledge presented in images over the history of anatomical representation belongs as much to the artist as it does the scientist. Early anatomical illustration required close collaboration between the artist and scientist, and invites the question: what was the intent of both disciplines in producing these images? These early representations of the human form were negotiated between the artist and the anatomist. They adhered to shared conventions of art and science to produce images rich not only with scientific knowledge but also deeper aesthetic and philosophical meaning. Early anatomy texts are a discourse on the human body, not merely because they are a visual display of the tension between the arts and science, but also because they are weighted with social, political, cultural, and religious meanings.

This early collaborative effort between the arts and sciences diverges under the strain of competing intent, function, and evolving conventions of each discipline and their approach to the human body. Whereas scientists were intent on imaging the body, artists imagined the body. While science stripped away the broad moral and symbolic meaning of the human body to produce neutral medical knowledge adherent to the purpose of healing, art upheld and explored those aspects of the human body that provoke emotional, humanistic, and spiritual responses.

The discovery of the X-ray and subsequent development of other imaging modalities allowed for visualization of the human body as never before and claimed clinical and diagnostic precedence. Technical conventions of anatomical representation were solidified, further relegating aesthetic and philosophical explorations of the human body primarily to the arts. Yet, while modern medical techniques and the images they produce claim scientific neutrality, anatomical representations produced by science have informed artists' perceptions of the body, and in doing so pushed the boundaries of how we view the human body.

Drawn from the collections of the Special Collections Research Center, the Smart Museum of Art, and the University of Chicago Medical Center, *Imaging/Imagining: The Body as Text* broadly explores the history of anatomical representation from the Renaissance to the present and the evolving relationship between the arts and science in producing representations that are both images and imaginings of the human body.

*This exhibition forms part of a larger exploration of Imaging/Imagining: The Human Body in Anatomical Representation. Two companion exhibitions are also on view: The Body as Art, at the Smart Museum of Art; and The Body as Data, at the John Crerar Library.*

*Imaging/Imagining: The Body as Text is co-curated by Brian Callender, Assistant Professor of Medicine, University of Chicago Medical Center, and Mindy Schwartz, Professor of Medicine, University of Chicago Medical Center, in collaboration with Catherine Uecker, Rare Books Librarian, Special Collections Research Center. Special thanks to Daniel Meyer, Joe Scott, Anne Leonard, Jenny Hart, Debra Werner, Julie Lemon, and the Arts/Science Initiative of the University of Chicago.*

*Radiographic images were provided and curated by Stephen Thomas and Adam Schwertner.*

## CHRONOLOGY

### Ancient and Medieval

The foundations of Western medical texts and imaging were laid in the ancient world. The art of healing was well established in ancient Greece by the time of Hippocrates (ca. 300 BCE), and the treatises he authored would be used as medical textbooks for centuries to come. Among those studying Hippocrates and his contemporaries was the Greek physician Galen (130-200 CE), who has been called the “father of anatomy and medical experimentation.” With the decline of the Roman Empire in the West, Greek medical teachings fell into disfavor in Europe. The information collected by Greek physicians, however, was preserved and built upon by Arab scholars—most notably Avicenna in his *Canon of Medicine*—and then brought back to Europe with the advent of the Renaissance.

Incun 1486.A9

Avicenna (980-1037)

*Liber canonis primus quem princeps aboali abinsceni de medicina edidit*

Venice: P. Maufer et Socii, 1486

Rare Book Collection

Highly regarded as a philosopher and physician, Avicenna (also known as Ibn Sina) was often compared to Galen in terms of the breadth of material he covered and its authority. His *Canon of Medicine* is the most influential of the Arabic medical texts. It was translated into Latin in the 12th century and greatly influenced Western medicine. In keeping with Islamic law, which generally prohibited portrayals of the human form, the anatomical representations of this time were highly schematic and abstract and often consisted of a series of five half-squatting (“frog-legged”) figures representing the five systems of the body: bones, nerves, muscles, veins, and arteries. Avicenna’s influence declined by the 16th century, with Western European humanists preferring the works of the ancient Greeks and Romans.

Incun 1497.B739

Hieronymus Brunschwig (ca. 1450-ca. 1512)

*Dis ist das Buch der Chirurgia*

Augsburg: J. Schönsperger, 1497

John Crerar Collection of Rare Books in the History of Science and Medicine

The *Buch der Chirurgia* was the first work on surgery published in German and one of the earliest German medical works to include illustrations. In the preface, Brunschwig acknowledges that it was a compilation of Ancient, Medieval, and Arabian texts. The “wound man” shown here was a popular tool in early medical texts to illustrate all the possible injuries that a person might suffer in war or by accident.

f PA3996.A2 1609

Galen

*Opera ex octava Juntarum edition...*

Venice: Apud Juntas, 1609

Rare Book Collection

Galen was the preeminent physician-philosopher of his time. He produced a body of work that was recognized as the most authoritative medical knowledge in physiology, anatomy, therapeutics, and pharmaceuticals for over 1500 years. Well-educated in the works of Aristotle, Plato, and Hippocrates, Galen was a practicing physician with his own pharmacy. In addition, as a physician to gladiators, Galen had the opportunity to learn about anatomy through the treatment of wounds.

Numbering over three hundred works, Galen’s writings include the influential *On Anatomical Procedures*, *On the Actions of the Parts of the Human Body*, and *On Bones for Students*. In his time, the function of organs was a mystery, and many of Galen’s contributions and discoveries related to understanding the structure and function of organs, including the brain, heart, lungs, and liver. Because human dissection was forbidden at the time, Galen made significant contributions to anatomy and physiology through careful

observation and dissection of animals. Many of Galen's theories and assumptions would later be proven incorrect, but his contribution of careful observation, experimentation, and demonstration was a significant foundation of medicine and science.

Galen's works were translated into Arabic and thus preserved by Arab and Persian scholars. They remained the authoritative teachings of medicine and anatomy through the middle ages and received renewed attention by humanist scholars during the Renaissance, notably *On Anatomical Procedures*, which contributed to the rebirth of dissection. Following the rise of Islam in the seventh century, Muslim scholars translated the great works of ancient Greece, including those of Aristotle and Galen, and contributed their own knowledge and findings. The subsequent translation of these works into Latin and their migration to Europe form an important scientific link between the ancient world and Renaissance Europe.

### **The Pre-Modern Era: Primitives**

Prior to 1543, medical and anatomical works were primarily text supplemented with a small number of images. These images were primitive in the sense that they lacked anatomical detail, in part due to the scientific knowledge of the time, but also due to the technical limitations of the printing process. Moreover, these works adhered to the teachings of Galen, which was based on the dissection of animals, including pigs and monkeys.

Not surprisingly, as anatomists would later prove, the anatomy described by Galen did not completely correlate with the anatomy of the human body. Yet, the teachings of Galen, including his descriptions of the human body, persisted as authoritative and remained unchallenged until Vesalius produced *De humani corporis fabrica libri septem* (1543).

Of the interesting questions that these images elucidate, one that can be asked of any image along the chronology of anatomical representation is: what purpose did the image serve at the time it was produced? If a more detailed image of the human body existed at this time, would it have had greater value given?

R128.6.F7 1529 (2<sup>nd</sup> title in book), plate facing XIII

Hans von Gersdorff (d. 1529)

*Feldtbuch der Wundartzney*

Feldtbuch der Wundartzney. [Augsburg: Durch Hainrich Stayner, ca. 1530?]

John Crerar Collection of Rare Books in the History of Science and Medicine

A military surgeon with the Prussian army for most of his career, Gersdorff authored this influential work on surgical techniques for war wounds. He expanded on the theories of Brunswig and also used the "wound man." It was the first published work to illustrate an amputation.

QM21.B47 1522, leaf 70

Jacopo Berengario da Carpi (ca. 1460-ca. 1530)

*Isagoge breves prelude ac uberime in anatomiam humani corporis a communi medicorum academia usitatam*

Bonona: Benedicti Hectors, 1522

John Crerar Collection of Rare Books in the History of Science and Medicine

Breaking from the text-based anatomies of the middle-ages, Jacopo Berengario da Carpi's *Commentaria super anatomia Mundini*, published in 1522, was the first full-scale illustrated anatomy text. This work was followed in 1523 by a smaller text, *Isagogae breves*.

Incun1500.K485, leaf cijj

Joannes de Ketham (active 15th century)

*Fasciculus medicinae*

Venice: Joannes and Gregorius de Gregoriis, de Forlivio, 1500

John Crerar Collection of Rare Books in the History of Science and Medicine

Ketham's *Fasiculus medicinae* was the first printed illustrated medical compendium. The illustrations in this work speak to the medical knowledge and clinical abilities of the era. In addition to the illustration presented here, this work also contains a "wound man," depicting the various wounds man can suffer from, and "astrological man," depicting man in relation to the astrological signs.

### **The Early Modern Era**

The publication of Vesalius's *Fabrica* defined the early modern age of anatomical representation, what is now considered the golden era of medical illustration. This period represents the transition from written description of anatomy to visual representation. Following in the footsteps of artist-anatomists like Michelangelo and Leonardo Da Vinci, the early modern era marks the high point of collaboration between the artist and scientist. The cultural expectations of artists, anatomists, and the audience demanded that anatomical representations ascribe more than a scientific meaning to the body; they also required moral, social, and theological meaning. Thus the illustrations were imaginative images of "living" skeletons and partially dissected cadavers engaging in visual metaphor, striking theatrical poses, coyly lifting their veil of flesh, or swaying to the danse macabre. These figures struggled with life and death and reminded viewers of their own mortality. The texts of this era were richly illustrated with artistic embellishments that entertainingly conveyed messages beyond mere anatomical representation, forcing viewers to look more closely at themselves as reflected in the image before them.

### **Vesalius**

In 1543, Andreas Vesalius's grand work, *De humani corporis fabrica (On the fabric of the human body)* was published in Basel and marked the beginning of an anatomical revolution. This work set the standard by which subsequent anatomy texts were measured and remains a seminal work in the history of medicine. In contrast to the works that came before it, the knowledge presented in *Fabrica* was derived from direct observation of dissections of the human body, thus challenging the authority of Galenic anatomy. Vesalius's insistence upon presenting knowledge learned from the "true book of the human body," while heretical to followers of Galen, was in the spirit of the scientific revolution and Renaissance that gave primacy to scholarly observation.

The images of *Fabrica*, however, are more than neutral illustrations with only scientific intent. With striking poses that are both artistic and highlight the anatomy, the images are a collaborative effort between artists and anatomist. In keeping with the narrative function of illustration at that time, the images tell the story of figures resisting mortality, struggling against and challenging the passing of time. Yet the science behind the illustrations, obtained from direct observation, marked a watershed moment, declaring that true anatomical knowledge, like most scientific knowledge, must be obtained from observation. By combining anatomical knowledge learned from direct observation with artistic intent, *Fabrica* is a monumental achievement of beautiful science.

f QM21.V588 c.2, p. 181

Andreas Vesalius (1514-1564)

*De humani corporis fabrica libri septem*

Basel: Ex officina Ioannis Oporini, 1543

Stanton A. Friedberg, M.D. Rare Book Collection of Rush University Medical Center at the University of Chicago

The illustrations, engraved by artist Jan Stefan van Kalkar under the direction of Vesalius, were more detailed, better drawn, composed and printed than any that came before them. Plagiarized and widely disseminated, the images and text of *Fabrica* have stood the test of time and remained the anatomical text of reference for generations.

f QM21.E8, p. 231

Charles Estienne (1504-ca. 1564)

*La dissection des parties du corps humain divisee en trois livres*

Paris: Simon de Colines, 1546

Rare Book Collection, From the Collection of Mortimer Frank

Though published in 1545, the illustrations in Estienne's work were actually executed in the 1530-40s, but due to a legal battle between Estienne and his collaborator over authorship credit, the publication of the work was delayed. If not for this delay, it has been speculated that Estienne's work would have been more renowned as the first lavishly illustrated anatomy text had it preceded Vesalius's *Fabrica*.

f QM21.P63 1741, plate V, facing p. 10  
Pietro da Cortona (1596-1669)  
*Tabulae anatomicae a celeberrimo pictore...*  
Rome: Ex typographia Antonii de Rubeis, 1741  
John Crerar Collection of Rare Books in the History of Science and Medicine

Bartolommeo Eustachi was a Galenist and condemned Vesalius's anatomical deviations from the teachings of Galen. His works, the first anatomical illustrations printed from engraved copper plates, consisted of simple figures, removed from the pageantry and landscaped backdrops of Vesalius's work.

ff QM151.A535 1754, TAB IV (rhino)  
Bernhard Siegfried Albinus (1697-1770)  
*The Explanation of Albinus's Anatomical Figures of the Human Skeleton and Muscles*  
London: John and Paul Knapton, 1754  
John Crerar Collection of Rare Books in the History of Science and Medicine

Albinus employed a technical strategy of using multiple cadavers and series of grids to ensure proper proportion as drawn from life. Contrasting in-focus figures of dark-tonality against slightly out-of-focus backgrounds of middle-gray tonality allowed the figures to project forward. In this image, Albinus, in keeping with narrative tradition, presents Clara, a renowned Rhinoceros at the time, as an additional romantic appeal to the wonders of nature.

### **Realism**

Anatomy as a discipline had an important role in early discourse about the practice of medicine in society. Between 1680 and 1800, the conventions of and expectations for anatomical representation shifted as the scientific community increased its focus on careful observation and systematic discovery. Science demanded dispassionate neutrality, and anatomists, in turn, developed new criteria for anatomical illustration that stripped away the artistic flourishes that characterized earlier illustration.

Anatomical representation under this new paradigm became scientific illustration, created by and for scientists. The focus shifted to the realistic depiction of the material before the anatomist's scientific gaze: the dissected body, imperfect and often inglorious. These depictions of the body challenged the cultural and artistic conventions of anatomical representation that preceded them. The details of the bodies are harsh and realistic, at times obscuring medical knowledge, and free of intentional moral or symbolic gestures.

These bodies are not meant to tell stories; they are instead intended to convey the dissected corpse as it lies before the anatomist. The realistic depiction conferred confidence that what was being viewed was true anatomy. Yet, despite the anatomist's intention, response to these images is not merely scientific. Viewed within the context of history and compared with modern anatomical representation, it is impossible to view these images without feeling more than the anatomist intended.

ff QM21.B6, plate 30  
Govard Bidloo (1649-1713)  
*Anatomia humani corporis...*  
Amsterdam: sumptibus viduae Joannis à Someren, 1685  
Rare Book Collection, From the Collection of Mortimer Frank

Bidloo's *Anatomia humani corporis*, published in 1685, was an exemplary work of realism. Compared with Gautier's "flayed angel," this image typifies the harsh reality of the dissection, expunged of artistic flourishes. The plates were drawn by Gérard de Lairesse and engraved by Abraham Blooteling.

f QM34.B33, facing p. 7  
Charles Bell (1774-1842)  
*A System of Dissections, Explaining the Anatomy of the Human Body...* 2nd ed.  
Edinburgh: Printed for Mundell and Son ; London: J. Johnson and Longman and Rees, 1799-1803  
Rare Book Collection

Bell studied art as a child and later anatomy under the direction of his brother, anatomist John Bell. He contributed text and drawings to John's *The Anatomy of the Human Body*. He published this work in 1798 while still a student in medical school.

f R114.S29 1836 atlas, plate 18  
Antonio Scarpa (1752-1832)  
*Atlante delle opere complete*  
Florence: V. Batelli, 1839  
John Crerar Collection of Rare Books in the History of Science and Medicine

Scarpa was credited by many as the co-founder of anatomical pathology along with his medical school instructor, Giovanni Battista Morgagni. Scarpa authored many works on anatomy, in particular ophthalmology. This compilation of his works was published several years after his death.

### **Universalism**

Toward the end of the 18th century, realism evolved into a new anatomical style. Universalism narrowed the anatomical gaze still further. By removing distracting elements of realism, such as props of the dissection and extraneous detail, it focused solely on the body or specific body parts and featured idealized anatomical composites. Additionally, by breaking down the body into scientifically abstracted parts, the body was further removed from the process of dissection and the intimations of death. The loss of the figure as a whole meant a loss of the humanizing aspects of anatomy and of the dialogue between the physical and symbolic meanings of the body.

These anatomically precise illustrations have clear and objective medical intent, often featuring rich textures and vivid colors that belie aesthetic qualities. Whereas realism revealed what was directly before the anatomist's gaze, universalism allowed for a composite representation of an idealized form. With the rise of modern medicine, anatomical representation demanded scientific accuracy that could serve clinical needs of diagnosis and surgery. To meet the needs of the medical education establishment, anatomical representation also had to fulfill didactic purposes of an increasingly detailed degree.

These pressures demanded that anatomical illustrations be scientifically accurate, thus valuing precision over composition and clarity over expressiveness. By the 1830's, anatomical universalism was the predominant style of anatomical representation, exemplified by Gray's *Anatomy: Descriptive and Surgical*.

QM23.G771 1858, Hand  
Henry Gray (1825-1861)  
*Anatomy, Descriptive and Surgical*  
London: John W. Parker and Son, 1858  
Rare Book Collection

First published in 1858, *Anatomy: Descriptive and Surgical*, which was later known as *Gray's Anatomy*, has since become synonymous with the discipline of anatomy. Gray's goal was simple: to create an anatomy text that was didactic, affordable, accurate and accessible to anatomy students in order to assist with their training and practice. With the black and white woodcuts by illustrator H.V. Carte, Gray removed the artistic flourishes and developed a style of scientific neutrality. Now in its 40th edition, Gray's *Anatomy* achieved its goal, as the work influenced the study of anatomy for generations following its publication.

ff QM25.B760 v.2, plate 84  
Jean Marc Bourguery (1797-1849)

*Traité complet de l'anatomie de l'homme, comprenant la médecine opératoire*  
Paris: C.-A. Delaunay, 1831-1854  
John Crerar Collection of Rare Books in the History of Science  
and Medicine

Bourguery's work includes over 700 hand-colored illustrations in eight volumes published over the course of 23 years. He worked with the artist Nicolas-Henri Jacob, who was a pupil of the French painter Jacques-Louis David. The influence of David's neo-classicism can be seen in the style of the images.

ff RG520.B82 plates c.3, Tab Ia and II  
Wilhelm Braune, Wilhelm (1831-1892)  
*Die Lage des Uterus und Foetus am Ende der Schwangerschaft*  
Leipzig: Verlag von Veit & Comp., 1872  
Rare Book Collection

Christian Wilhelm Braune developed a technique for reproducing cross-sectional anatomy. Braune froze the body of a young healthy man who committed suicide, sectioned the body and then made tracings of the sections on thin paper. The images produced by Braune were of questionable clinical value at the time, given that practitioners did not view anatomy from that perspective. Nonetheless, the anatomical views produced by Braune are now commonly employed using modern medical imaging, including the CT scan and MRI.

ff QM25.C60 v.2, plate 59  
Jules Cloquet (1790-1883)  
*Anatomie de l'homme, ou Description et figures...*  
Paris: Imprimerie Lithographique de C. de Lasteyrie, 1821-31. Vol. 2.  
John Crerar Collection of Rare Books in the History of Science and Medicine

Over the course of ten years, Jules Cloquet produced this massive five-volume work containing over 3000 figures. A mixture of copied plates and original illustrations, many of the images represent universalism, consisting of highly detailed composite anatomical entities, abstracted from their bodily context.

ff QM25.G397, head and angel  
Gautier Dagoty (1717-1785)  
*Anatomical Engravings*  
[N.p.: n.p., ca. 1750?]  
John Crerar Collection of Rare Books in the History of Science and Medicine

Jacques Fabien Gautier d'Agoty trained as an artist and used a novel four-color technique of mezzotint to produce images that are more art than science. While the anatomic detail is less detailed, the aesthetic qualities of the images are striking. Gautier's "flayed angel" is often critiqued as being a form of voyeurism, with the female figure coyly revealing herself.

### **The X-ray: A New Kind of Light**

In 1895, Wilhelm Röntgen discovered the X-ray and forever changed the way that humans viewed themselves. Prior to the X-ray, the only way to see into ourselves required opening the flesh veil to reveal what exists beneath either through dissection or surgery. With the discovery of the X-ray, images of true living anatomy were possible and the human body became transparent.

The X-ray, as both a diagnostic and therapeutic technology, significantly advanced the practice of medicine and heralded the medical imaging revolution. The now common medical imaging modalities of the ultrasound, CT scan, and MRI that followed the X-ray further refined and redefined how the human body is viewed. While the medical implications of the X-ray were immediately obvious, this technology and the images it produced had a profound impact on culture and society, affecting the popular imagination, redefining self-perception, and blurring the boundaries between the public and private.

The mass appeal of the X-ray resulted in the ubiquitous social adoption of the X-ray image as a black and white snapshot of the transparent self. The technology of the X-ray and subsequent modalities of medical imaging replaced the subjective gaze and interpretation of artists, and even the anatomist, with an objective, yet abstracting technical gaze.

## FLOOR CASES

### Golden Era

f QM101.C53, plate XXXVI  
William Cheselden (1688-1752)  
*Osteographia, or, the Anatomy of the Bones*  
London: [W. Bowyer for the author, 1733]  
Rare Book Collection, Collection of Mortimer Frank

The publication of this volume was delayed when Cheselden abandoned the first draft of plates because he thought they were not completely accurate. He then had his artists, Gerard Vandergucht and Jacob Schijnvoet, use a camera obscura. Cheselden chose the poses for the skeletons and oversaw each stage of the production.

QM21.V22, p. 64  
Juan Valverde de Amusco (ca. 1525-ca. 1588)  
*Anatomia del corpo humano*  
Rome: Ant. Salamanca, et Antonio Lafreri, 1558  
Rare Book Collection

While most of the images in Valverde's works were copies from Vesalius, the most striking image, that of a man with knife in hand holding his flayed skin, alludes to the martyred Saint Bartholomew and Michelangelo's *The Last Judgement*. Alternatively, the image represented man taking part in his own dissection, symbolic of the act from which anatomical knowledge is obtained.

f QM21.P48 1740, plate 25  
Gaetano Petrioli  
*Riflessioni anatomiche sulle note di Monsignor Gio: Maria Lancisi fatte sopra le tavole del celebre Bartolomeo Eustachio...*  
Rome: Nella stamperia di Giovanni Zempel, 1740  
John Crerar Collection of Rare Books in the History of Science and Medicine

Petrioli was famous for reproducing the anatomical plates of Bartolomeo Eustachi, who had completed his drawings in 1552. Petrioli obtained the original plates from a cardinal in the Vatican and claimed that he was commissioned to produce an improved edition. There are forty-seven Eustachi plates in this volume.

alc f QM21.S672 1627, Plate 15, 4, p.27  
Giulio Cesare Casseri (ca. 1552-1616)  
*Tabulae anatomicae*  
Venice: E. Deuchinum, 1627  
Rare Book Collection

The drawings of Giulio Casseri, who died while preparing this work, was paired with the text of Adriaan van den Speighel. The images by Casseri follow the convention of narrative illustration and often conveyed social commentary. The figure presented here, with its bent knee, use of a peg cane and wearing a soft helmet with ear flaps, is symbolic for that time of a beggar or professional "cripple" often associated with criminal activity.

## ANATOMICAL FLAP BOOKS



Anatomical flap books are an interesting and engaging genre of anatomical texts that invite viewer participation in the exploration of the human body. While anatomy and anatomical representation became a scientific discipline, images of the anatomical body found new audiences through popular movements and mass media. In part due to improved print technologies, creative and interactive images of the human body proliferated to engage the public, including anatomy flap books and manikins.

Anatomical flap books, through a series of layered, moveable flaps, allow the viewer to participate in a textual, multi-dimensional dissection. Sections can be opened to reveal the body parts beneath, allowing the dissection to unfold in time as the viewer “reads” through layer to layer. With their vivid colors and graphic quality, anatomical flap books of the 19th and early 20th century appealed to a general audience as part of the popular health movement. While their use for medical purposes was limited, anatomical flap books often served as didactic tools for practitioners to educate their patients.

The materials in this case represent a spectrum of anatomical flap books, from an early version where the anatomy is primitive yet the images have artistic flourish, to a colorful full figure manikin typical of popular models of the era, to a more graphic representation of the human head with diagrammatic abstractions to explain complex anatomical and physiological concepts.

### **THE HAND**

The hand is both tool and metaphor. No other part of the body can be substituted for the whole like the human hand. Man’s prehensile thumbs, his precise grip and sensitive touch are the source of man’s agency. More than any other part of the body, hand also embodies the dualities of art and medicine.

The hand is the instrument of the artist, and the ability of the artist to represent the human hand conveys one’s mastery. Images focusing on the hand abound, as exemplified by Michelangelo’s outstretched hands of Adam and God in the Sistine Chapel or Rembrandt’s famous *Anatomy Lesson of Nicolaes Tulp*. Vesalius, in the only known representation of him, is portrayed dissecting the arm of a cadaver.

In drawing and sculpture, the hands depicted here convey emotion, power, and meaning. The position of the hands and gestures of the hands are able to communicate beyond spoken language. The simple act of pointing implies a shared understanding. The enduring role that the hand plays in medicine lies buried in the origin of the word—*chirurgery*—that part of medical science and art which is concerned with the cure of diseases or bodily injuries by manual operation. The hand is an essential part of what makes the surgeon.

As in art, much medical iconography relates to the hand. Röntgen’s original and most well-known X-ray was that of his wife’s hand. The widely reproduced image exposes the bones and captures her now famous ring. When first introduced, these images were both titillating and terrifying. The power of X-rays and medical imaging is that they allow us to see beyond the surface. Today they are part of the expanded vocabulary about how we see the human body and understand what makes us human.

ff QM21.C84, plate 71 (reproduction)  
William Cowper (1666-1709)  
*The Anatomy of Humane Bodies...*  
Leiden: Printed for Joh. Arn. Langerak, 1737  
Rare Book Collection, Collection of Mortimer Frank

Cowper’s volume was one of the more controversial medical works published in the 18th century. The majority of the plates were taken from Bidloo’s *Anatomia Humani Corporis* (also shown in this exhibit), but Cowper did not acknowledge either Bidloo or Lairese, the engraver of the original plates. Cowper did contribute new text to accompany the plates. The ensuing debate between him and Bidloo via letters and pamphlets was quite acrimonious and Cowper never did provide substantial proof that the plates were his.

QM24.M381 1821 v.1, plate 1  
Paolo Mascagni (1755-1815)  
*Descrizione della tavole citate nel Prodomo della grande anatomia*

Milan: Presso Batelli e Fanfani, 1821  
John Crerar Collection of Rare Books in the History of Science and Medicine

Best known for his study and publications on the lymphatic system, Mascagni also wrote a number of comprehensive works on anatomy. Most of his works were published by family members after Mascagni's death, including this title.

ff NC760.S18 1812, plate 3 hand (reproduction)  
Jean Galbert Salvage  
*Anatomie du gladiateur combattant, applicable aux beaux arts*  
Paris: Chez l'auteur. De l'imprimerie de Mame, 1812  
John Crerar Collection of Rare Books in the History of Science  
and Medicine

Tarkan Paphiti wrote, "A military doctor of the Napoleonic era, Jean-Galbert based his drawings on dissections of killed soldiers. However there was some method to his madness. For this study of the 'Borghese Gladiator' an ancient Greek statue, he arranged his cadavers in the same pose as the sculpture and meticulously worked out the skeletal and muscular anatomy. Working this way gave him the ability to create very accurate anatomical studies and yet his work would still be regarded as fine art."

#### **ACADEMIC ART ANATOMY**

With the rise of formal art academies in the 17th and 18th centuries, anatomy held a prominent place in an artist's training. Using cadavers and skeletons, artistic study of anatomy focused on superficial anatomy and the structural components that affect bodily form, movement, and expression.

Early anatomy texts were the product of a close collaboration between artist and anatomist that drew upon artistic and scientific conventions to produce works that combined classic aesthetics with anatomical realism. Professors of anatomy were often appointed to teach in art academies. However, as science became more focused on the anatomical truth of the human body, the collaborative conventions of anatomical representation diverged. While medical anatomy became more clinical, art still operated in service of the humanizing aspects of the human body, including those of moral, theological, aesthetic, and cultural importance. As anatomical representation became more technically focused, artists abandoned the acquisition of anatomical knowledge in search of naturalism and explored increasingly abstract concepts of the body in search of deeper meaning and symbolism.

The images depicted here examine the artist's imagining of the human body to represent the human condition and force us to contemplate and understand ourselves.

f NC760.G4 1691, plate 22, p. 38  
Bernardino Genga (1620-1690)  
*Anatomia per uso et intelligenza del disegno*  
Rome: de Rossi, 1691  
John Crerar Collection of Rare Books in the History of Science and Medicine

A noted scholar of ancient medical texts, Genga edited the works of Hippocrates. He had a strong interest in classical anatomy found in Greek and Roman sculpture. These two interests combined in Genga teaching anatomy for artists at the French Academy in Rome.

f NC765.S320 1841, plate 12  
Giambattista Sabattini  
*Tavole anatomiche per i pittori, scultori, ed altri. 2nd ed. per cura di Giovanni Zecchi*  
Bologna: G. Zecchi, 1841  
John Crerar Collection of Rare Books in the History of Science and Medicine

Sabattini was both a physician and an artist. He taught anatomy for artists at the Accademia di Belle Arti di

Bologna. An accompanying treatise on bones and muscles was never published.

NC760.P58 1783, plate 19  
Cornelis Ploos van Amstel (1726-1798)  
*Aanleiding tot de kennis der anatomie*  
Amsterdam: J. Yntema, 1783  
Rare Book Collection

In addition to being an artist, Ploos was also a noted art collector. His print collection numbered over 7,000 items at his death. He was a member of the Stadstekenacademie in Amsterdam, where he taught drawing, and wrote a number of instructional texts.

f NC760.S652 1827, plate 1  
John Rubens Smith  
*A Compendium of Picturesque Anatomy...*  
Boston: Published by the Author, 1827  
John Crerar Collection of Rare Books in the History of Science and Medicine

Smith was an accomplished painter and printmaker. English by birth and training, he taught art in the United States and wrote drawing manuals.

f NC760.D87 1613  
Albrecht Dürer (1471-1528)  
*Les quatre livres d'Albert Durer, peintre & geometrien tres excellent, De la proportion des parties & pourtraicts des corps humains*  
Arnhem: Chez Iean Ieansz, 1613  
John Crerar Collection of Rare Books in the History of Science and Medicine

Both artist and anatomist were concerned with bodily proportion. Artists, such as Albrecht Durer, published treatises on proportion that broke down the body in components, often based on the relative unit of the head or height. These works were usually preoccupied with defining the ideal body in terms of classic aesthetics and beauty.