Historical Perspectives on Art and Anatomy

Kemp/Wallace Introduction to *Spectacular Bodies*

"Our easy confidence in classifying….historical images is misplaced. There are two immediate grounds for saying this.

(1) the world of medicine and its associated imagery occupied very different cultural territories from today's professional mainstream….. anatomical images during the period from the Renaissance to the 19th century had as much to do with what we would call aesthetics and theological understanding as with the narrower intentions of medical illustration….

(2) The makers of images were, for the most part, trained as artists and continued to call themselves 'painters' or 'sculptors', sustaining the practice of their art outside the realm of medical imagery.

Anatomists and artists then, forged a relationship early in the history of medical science to learn about and illustrate the human body."

It is important to foreground this by stating clearly that during the middle ages and prior, much of what was known about the natural world (plants, animals, stones, humans) had been written by the Greeks and Romans before the current era (BCE). Pliny, a roman naturalist, disparaged the notion that taking a walk in the woods might inform the scientist about the natural world. He preferred to rely on the writings of those who came before him. Thus in the early middle ages, there was not the emphasis on observation that became so critical to the scientific discoveries of the Renaissance. Rather, the middle ages was an era in which knowledge was based in (1) writings from antiquity and (2) theological understanding of the world created by God. Observation and empirical evidence was superfluous. (3) Astrology and the (4) humoral theory also were relied upon my most medical practitioners

Thus, the notion of actually looking at a human body to determine how it functioned signaled a shift in scientific thinking in 14th c. Europe. During the 14th – 17th centuries, Direct, sensory knowledge gradually became prioritized as the best information, rather than slavish adherence to ancient texts.

Now this seems obvious and elementary to us because our fundamental cultural values have shifted to science and to empirical evidence. We seek evidence to prove ideas. We do not trust 'revealed truth' or knowledge taken on faith. Doing so would be conducting bad science.

Anatomical Dissection

The Greeks developed an understanding of the anatomy during the Hellenistic era (8th-4th centuries BCE) through dissections, but in Europe, the practice ceased in the early centuries of the first millenium. In the late roman-to-middle ages (800 – 1200) what was known about the body had been gleaned by watching people die or seeing corpses on a battlefield.

Dissection of bodies appears to have emerged again toward the late 13th c (late 1200s).

Image of a dissection from *Anatomy* (book by Mondino de'Liuzzi) woodcut, 1493 (the book was originally written in 1316)
The outdoor setting is not necessarily unrealistic. Dissections were sometimes performed outdoors in the 14th and 15th centuries.

The purpose of this illustration is not to show a realistic depiction of a dissection, but to provide a standard (and imaginary) author portrait of Mondino (in the chair – that's not a bishop). Anatomists usually did their own dissections as they lectured; this image suggests that Mondino deputed the actual dissection to an assistant, which was not the case.
Medieval dissections were usually done in winter (no later than February in southern regions), at medical schools such as Montpellier, Bologna and Padua, and performed as quickly as possible. Very few were completed even in medical schools – Padua, for instance only performed one male and one female dissection per year. The result was that in the 14th and 15th centuries a medical practitioner might practiced largely in book reading and dissections of pigs to understand human ailments and anatomical structures/systems.

The primary reason there were not many dissections and no active investigation was that the medieval practitioner did not find dissection to provide much additional information beyond that found in books in part because of the kinds of questions practitioners were interested in learning about such as: Whether Galen or Aristotle was right about the heart's role as the ruling organ in the body.

The objective of dissections in the middle ages was instruction NOT investigation. Dissections were not considered empirical evidence that could prove, or correct, information found in ancient texts. And they were certainly not viewed as alternatives to book learning which was primary. For example, Mondino's anatomy book, which is based on his own dissections, agrees with Aristotle's assertion that there are three ventricals in the heart (there are only two).

This was an era in which the humoral theory (the balance of humours – blood, yellow and black biles and phlegm) were the primary indicators of health and diagnostic tools. Likewise, astrology, and numerology could indicate health or the lack thereof.

Andreas Vesalius, *De humani corporis fabrica*

Title page (from Andreas Vesalius' book, *De humani corporis fabrica*, 1543) engraving (artists not indicated)

This image shows the master dissector, Vesalius himself, performing in his famous hands-on role. The image is designed to make a number of polemical points (it is not intended to be a photo-journalistic document).

- The primacy of direct experience
- The body as the "new book" to be 'read' by the surgeon , rather than ancient texts to be textually read
- Vesalius is presented as the heroic measurer of 'divine symmetry'; his dissection reveals the majesty of God as the 'supreme maker'

His text and the images created by artists were designed to make the reader feel as though s/he is actually witnessing the real thing.

His procedure is carefully outlined; he tells us what has been removed

***Muscle Man* (from Andreas Vesalius' book, *De humani corporis fabrica*, 1543) illustrations by Jan Stephan van Calcar**
This image portrays a flayed man, with various structures marked with letters of the alphabet that correspond to a list of structures in the text. The hanging shape on the right is the diaphragm (?)

The Anatomy Theatre at Leiden, anonymous artist, engraving, 1700
During the 17th century, dissection theatres appeared and were sometimes as much about entertainment as investigation. The theatre at Leiden was situated in the university, but also permitted non-medical observers to attend dissections.

As humanism took hold in Europe, intellectuals increasingly made the argument that understanding God's creation through direct observation and investigation actually honored God.

> *"Since our actions are directed towards wisdom and justice, and true wisdom is the recognition of God and the consideration of Nature, one must admit that one must learn anatomy, through which the casues of many actions and changes are made visible."*
> Philip Melancthon (humanist and friend of Albrecht Durer)

Dissectors and their medical peers often collected funds from the group to patronize artists who created portraits of the scientists. Several examples of these works exist, including these two by Rembrandt:

Rembrandt The Anatomy Lesson of Dr. Jan Deijman, 1656, oil (fragment/detail)
Rembrandt, The Anatomy Lesson of Dr. Nicholas Tulp, 1632, oil
Tulp's original name was Claes Pietersz (pron. Peters), but his involvement in the Dutch tulip craze led him to change his name to 'tulp' which is dutch for 'flower.' Here Tulp and his colleagues are investigating the inferior and superior flexor tendons. The hand was considered one of the most interesting mechanisms in anatomy.

The earliest source of cadavers were from public executions and some less official early dissections procured by robbing graves. A couple of englishmen whose primary source of income came from supplying schools with cadavers regularly robbed graves and even murdered vagrants and outcasts to ensure a steady supply of fresh cadavers.

William Hogarth, The Reward of Cruelty, 1750, engraving
In this image, Tom Nero suffers the ultimate indignity having been executed and his body dismembered in full public gaze. On occasion, dissection might be added to an execution sentence and read aloud in court to a convicted criminal.

Renaissance Artists and Anatomy

Shifts in artistic style and values made the study of anatomy a subject of interest to artists. And the belief that artists should know anatomy as part of their training was expressed by Leon Battista Alberti (architect and theorist of the Italian Renaissance), who held the conviction that portraying the idealized human body in its proper proportions was a major task of sculpture and painting.

Alberti wrote:

....it will help, when painting living creatures first to sketch the bones, for as they bend very little indeed, they always occupy a certain determined position. Then add the sinews and muscles and finally clothe the bones and muscles with flesh and skin....But....there will perhaps be some who will raise an objection....namely that the painter is not concnered with things that are not visible. They would be right to do so except that, just as for a clothed figure we first have to draw a naked body beneath and then cover it with clothes so in painting a nude, the bones and muscles must be arranged first, and then covered with appropriate flesh in such a way that it is not difficult to perceive the positions of the muscles.

Antonio Pollaiuolo, *Battle of the Nudes*, 1470 engraving
Was probably the first renaissance artist to undertake dissections, though the better-known example of such an artist was Leonardo da Vinci.

Indeed, the style of the day in renaissance Florence and Rome was that any artist worth his salt must be able to accurately depict the muscles of the body and this work by Pollaiuolo was composed both for display and for teaching about anatomy.

Leonardo DaVinci

Undertook dissections himself and kept a notebook of his observations.

These studies while focused on observations of the anatomy, do still sometimes appear the work of an artist, rather than an medical illustrator. The difference being the degree of accuracy vs. the desire to draw a beautiful drawing (these function has informational, beautiful drawings, but not as medical studies)

Studies of the hand pen, ink, wash, charcoal on paper (1510)
Study of the tendons and muscles of the foot, ankle and lower leg, (1510)
Study of shoulders and spine (1510)
Studies of the vessels of the thorax, heart, blood vessels compared with the seed of a plant (1501)
Studies of human feotus, the uterine wall, and the pronation of the arm, (1510-12)

By the late 16th century, Italian art schools began emerging and among the courses studied were Professors of Anatomy from the medical world.

***St. Bartholomew*, Agnolo Bronzino, 1555**
An anatomical study of the flayed body indicating the artist's ability to convincingly portray musculature, under the guise of a religious image – Christ's disciple who was martyred by being flayed alive.

Ecorches

In the era of Art Academies (1683 until the late 19th century), ecorches of the male body appeared in the 18th c art academies of London and Paris as exemplars of heroic perfection, becoming a genre in its own right (genre refers to a subject that many, many people portray – still life, landscape are *genres*).

Smugglerius (ecorche of Man in the Pose of the *Dying Gaul*) plaster cast, 1775
Dying Gaul, 240-200 BCE (Hellenistic sculpture/Roman copy) marble

Smugglerius was sculpted by Agostino Carlini in plaster in 1775 for the Academy in London. The flayed corpse of a 'remarkably' muscular thief was placed in the same pose as the Roman sculpture.

Anatomical Crucifixion, Thomas Banks, 1800, plaster
Crucifixion, Michelangelo, 1492, wood
Made from the form of an executed murderer, by Banks and Benjamin West who wanted to find out exactly what a crucified body would look like.

Wax Anatomical Models

Life-sized 3-part dissection, book plate, 1823 by Paolo Mascagni
Flat, 2-D images of anatomy were fine – and many were created for publication in books of often very large size – like this one. They were, however expensive and cumbersome to use and own.

Organ of touch, Clemente Susini, 1803, wax
But then came the wax anatomical model.

The three-dimensionality of these forms presented far more information about the structures of the body because they were to human scale and 3D – permitting the viewer to understand the dimensionality of organs and how structures fit together.

These were appealingly realistic – the color injected into the wax gave the parts of the anatomy a hue and luminosity that actually doesn't appear in real cadavers.

The realism of the pieces was made even more theatrical by the manifestation of poses that often drew from art historical works – the wax models often appear conscious and active.

Female reclining figure by F. Calenzuoli, 1831, wax

Reclining female figure, Susini, late 18th c.
Martin Kemp describes this work by Clemente Susini a leading wax sculptor, as a disembowelled woman lying on her back on her silken sheet I"n the attitude of expiring ecstasy as she goes to meet the 'maker' of such a divine contraption."

Odalisque as Slave, Ingres, early-mid 1800s
Titian, Venus of Urbino
Of course this is one possibility. The reclining nude female cortesan, odalisque, maya have been a genre in the arts since the early Renaissance and this too, might be a visual source for the pose used for these anatomical waxes.

Thus it can be said that these models intended for anatomical study, made by sculptors whose work also included artistic depictions, necessarily are imbued with some of the expression found in works of art of the same era – the intention toward narrative in these models is a function of the artists' sensibility for the expressive.

Thus we get waxes that are curiously clinical and simultaneously theatrical.

Anatomy of a Seated Woman by Andre-Pierre Pinson, late 18th c, wax

This work, likewise may be somewhat influenced by another common theme for paintings, Susanna and the Elders (shows up in the Torah and the Old Testament of the Bible)

Susanna and the Elders by Artemesia Gentileschi, 1610, oil on canvas

Head, Trunk and left limb of male with vessels and nerves, Susini, 1804, wax
Male Anatomical Figure, Ercole Lelli or Anna Morandi, 1740-80, wax

Female bust with open abdomen, by Giovan-Battista Manfredini, 1773-76, terracotta
Madonna and Child, Bellini, oil, 1510
The spatial information 3D models provided was particularly critical in the field of obstetrics in which the position of the fetus is critical in a successful delivery.

This wax was made by Manfredini for an obstetrician.

Ivory anatomical figure (pregnant female with some removable parts, lying on a cloth covered bier in wooden box, 17th c, ivory, wood, cloth
This form – and there are numerous similar examples – seems to have been used to explain the reproductive cycle to soon-to-be mothers. The scale of the work suggests portability as a pimary concern, as opposed to rigid accuracy of the forms. These could be taken apart to reveal the fetus in utero

Harvey Anatomical Tables, cedar, varnish, human arteries (1640)
Believe to have belonged to William Harvey, the person to accurately describe the flow of blood through the body generated by the heart as a pump, these are human vessels mounted to boards.

Conclusion/Summary

Artists working in tandem with anatomists were involved in medieval and renaissance investigations and depictions of the body.

Scientists relied increasingly on *visual* information over traditional (and ancient) textual information.

Visual representations of the body were crafted by skilled sculptors, engravers and painters, to document anatomists' observations (and corrections to ancient knowledge) about human anatomy.

Medical models of the 14th – 18th centuries, often incorporate expressive and narrative qualities that we generally associate more with 'art' than with 'biomedical illustration'. This was because the artists developing images and forms for anatomists were still working within the aesthetic modes and styles of their day.

Renaissance artists placed a premium on anatomy and undertook anatomical study and often performed dissections themselves in order to learn first-hand about the structures and mechanics of the body.

Bibliography

Spectacular Bodies: The Art and Science of the Human Body from Leonardo to Now. M. Kemp and M. Wallace. University of California Press, 2000

Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice. N. Siraisi. Chicago U. Press. 1990.