

LEONARDO, ANATOMIST

[by John H. Lienhard](#)

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Today, the artist teaches us anatomy. The University of Houston's College of Engineering presents this series about the machines that make our civilization run, and the people whose ingenuity created them.

We've seen Leonardo da Vinci's sketches of the human form. We've seen his sketches of bone and muscle that shape us. Still, how many of us would call Leonardo an anatomist? Call him an artist -- an engineer -- a sculptor -- but an anatomist?

Yet Leonardo was the best-informed anatomist of his day. His inventories of tools always included "chisel and bone saw, and the sharp knife." He did some 30 human dissections, not to mention animals. (He especially liked to study the ox.) He left us upwards of 800 anatomical drawings.

He also understood that the picture had to be the medium for recording what he learned. The classical anatomies of his day described the body in words. Leonardo said about that,

With what words [can you] describe the whole arrangement ... the more detail you write concerning it, the more you will confuse the mind of the hearer.
So he cut and drew. He had no illusions about the work. He said,
... you may perhaps be deterred by natural repugnance, and if this does not prevent you, you might be deterred by fear of passing the night hours in the company of these corpses, quartered and flayed and horrible to behold.

Leonardo created a new pictorial vocabulary. At first, the body -- especially its inner contents -- seems undrawable. He invented cutaway sections. He made his own X-rays by laying semitransparent tissue over underlying organs and bone. Leonardo the artist resurrected the dead -- gave them new life -- even as Leonardo the surgeon cut them into pieces.

He was first to identify the sinus cavities. He was first to identify the heart as a muscle. He was first to see that it was four-chambered. He showed us that every muscle had another muscle working in apposition to it. He anticipated the existence of microscopic capillaries 150 years before Harvey did. He used casting to determine the shape of internal cavities.

And I go back to that statement about horror and repugnance. Leonardo was driven by his art -- by his sense of beauty. Leonardo understood that beauty lurks within ugliness. He saw beneath the surface. He also trumpets the coming of a new age of empirical science when he warns us that,

If you wish to demonstrate in words ... do not meddle with things appertaining to the eyes by making them enter through the ears, for you will be far surpassed by the painter. So go to your bookshelf. Go to your library. Let Leonardo's art show you what he saw. It is a majestic view -- those flayed bodies laying bare the corporeal stuff that forms us. He shows us the fragile tissue that shapes our actions and carries our dreams.

I'm John Lienhard, at the University of Houston, where we're interested in the way inventive minds work.

(Theme music)

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