

## A Rembrandt in the Attic

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In 1996, the art exhibit titled *Body Worlds*, caused quite a stir when it opened in Japan. Over the next two years, almost 3 million visitors viewed the exhibit. The installation consisted of numerous human cadavers preserved through a “plastination” technique, which allowed the specimens to be posed in active positions and allowed easy differentiation of organ systems. Without the dermis, one could see how the human machine works in the every day environment. *Body Worlds* is an example of information as art.

Much of the controversy surrounding the exhibit stemmed from the questions about the cadavers. Who were these people? How did their bodies end up in this collection? Any experience with cadavers can produce an uneasy mix of fascination and repulsion. Anyone who has witnessed the death of a loved one knows that it is animating life that imbues the body with a presence. Once inanimate, the human body is simultaneously less than it was and more than it is. Every dental student has faced this antithesis on the first day of anatomy lab.

Anatomy is one of the oldest of sciences. Before we learned how the body worked, we learned its geography. Dissecting, mapping, and describing relationships between organ systems — these functions are the foundation of modern medicine. Rembrandt’s 1632 painting, *The Anatomy Lesson of Dr. Nicolaes Tulp*, is a beautiful rendition of a dissection and an excellent example of art as information. In it, Dr. Tulp demonstrates muscle flexion and the resulting movement of the fingers to an audience of his contemporaries.

Using his media, pigments, and a flat substrate, Rembrandt was able to



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transmit information about the dynamic interaction of muscle and bone. Within a single static frame, he was able to represent motion. He achieved this, and conveyed the cultural norms of 17th century Holland and the personality traits of his subjects. There is so much to be learned from that single, hand-wrought image. It is a masterpiece of information.

Every dental student has to spend some amount of time in the study of anatomy. (I still associate the smell of formaldehyde with September anatomy labs.) There are many aspects to the study of anatomy. Learning the geography of the body is like trying to find your way in a new country. You can have the map in front of you; but, without the proper reference points, it is easy to mistakenly think you are in an entirely different location. The human body is a network of integrated systems. To understand all aspects of head and neck anatomy, it must be considered within the context of the whole body.

Today’s anatomy class has changed. It has to share precious curriculum time with other emerging sciences. When Dr. Tulp was dissecting in the 17th century in Amsterdam, there were no classes on immunology to compete for student attention. Along with more competition for academic exposure, the very nature of dissection and display has drastically changed over time.

Soon, there will be no formaldehyde smell associated with anatomy labs. There will be no cadavers and no scalpels. The era of virtual dissection and 3-D display is beginning.

Long before I visited Disneyland in person, I visited it virtually with the aid of a View-Master. The View-Master stereoscope was one of those technological breakthroughs that initially held great promise for its military applications, but today has since devolved into part of the Fisher-Price holdings. Invented by William Gruber, it made 3-D viewing child’s play. In 1948, Dr. David Bassett recognized the View-Master’s potential for transporting the anatomy student into his lab at Stanford University. Not only was Dr. Bassett recognized for his incredibly precise dissections, he also was famous for perfecting a means of fixing and differentiating human tissues thereby making them much easier to visualize.

For more than 17 years, Bassett and Gruber collaborated to produce an astounding collection of more than 1,500 stereoscopic views comprising an atlas of human anatomy. Though wildly popular when they were introduced in 1962, the View-Master reels languished and eventually were all but forgotten.

Dr. Paul Brown, a Bay Area endodontist, came across the dusty volumes of View-Master reels in the anatomy lab at

Stanford. Recognizing the quality of the films and subjects, he and his colleagues have used NASA software to digitize the Bassett collection and turn it into a Google Earth version of the human body. Their digital atlas has preserved Dr. Bassett's exquisite dissections and translated them into a more interactive, educational tool. Like *Body Worlds*, the Bassett collection offers up a visual presentation of astounding complexity. Layer after layer of the human body is dissected and displayed. Notes on origin, insertion, innervations, and function are all available with the click of a mouse. It is the human body's "Missing Manual."

The digital atlas has the potential to illustrate human anatomy to students all around the globe at all levels of sophistication. We will be able to acquire images to help communicate complex anatomical relationships to our patients. The iPhone application will bring the Bassett collection to a populous never dreamed of by Bassett or Gruber.

Information can be the simple transmission of a fact or it can be facts organized and presented in such a manner that the information unfolds in complexity like a rose. The Bassett collection is a rediscovered masterpiece of scientific information that will see the light of day

again. And like a rediscovered masterpiece of art, it will impact the lives of all those who interact with it.

Thanks to a combination of advances in three different fields — anatomy, photography, and computer software — and a serendipitous find by an inquisitive dentist, a masterpiece of information has been rescued from the attic and brought back for us to appreciate and to enrich our lives. ■■■■

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