

# Biography of a blockbuster text book

## The Anatomist: A True Story of Gray's Anatomy

by Bill Hayes

Ballantine Books: 2007. 272pp. \$24.95

### Ken Arnold

We've all heard of it. Many of us have flicked through it in a bargain book shop. It has gone through more than 30 revised editions on each side of the Atlantic and has sold more than five million copies. *Gray's Anatomy* is surely one of the world's great books. But, as Bill Hayes discovered in researching this publishing marvel, evidence of how it came about is scant.

Illustrated anatomy texts had been in circulation for more than half a millennium when *Gray's Anatomy* was published in 1858. Its author, English surgeon Henry Gray, aimed not to produce an enduring classic, but to improve on the passable text books he had used as a student at St George's Hospital Medical School in London.

The medical curriculum's recent expansion and the increasingly widespread use of anaesthesia provided a fertile context in which to launch a fresh anatomical text book. Arguably Gray's most significant innovation was to focus on surgical anatomy, ensuring that his book would remain useful to medics long after they had entered the professional world. This commercial formula has proved buoyant ever since.

From its first reviews, critics were struck by the clarity and functionality of the atlas's pictures. Such fare had long served to objectively analyse the body in ever finer detail and to remind scientists, doctors and patients alike of its subjective and emotional resonance. Gradually the rigorous demands of the former squeezed out the opportunity to indulge in the latter.

*Gray's Anatomy* effectively marked the end of the road for the troops of playful cadavers that had, in earlier volumes, cavorted with props and danced as only the dead know how. Here instead images shied away from the notion of style altogether. The book offered a set of pictures that students and professionals were supposed to look through rather than at, into the realities of nature that they revealed. Recently, medical thinkers have begun to ponder what was lost when the two approaches were separated, and whether a third way — medical humanities — should now be cultivated.

Gray's bible of medical understanding emerged from his collaboration with another Henry. In June 1850, Gray, the project's instigator, invited the more junior Henry

Vandyke Carter to supply what became the iconic illustrations. Even before their inspiring collaboration, Carter prophetically declared: "Two persons are generally concerned in every fact, one discovers part, the other completes and corrects."

Of Gray, we know very little — even the year of his birth is contested. Luckily, various archives reveal much more of Carter's life and work. The illustrator probably inherited his aesthetic abilities from his father, the practising Scarborough artist Henry Barlow. Carter headed south to pursue medical studies in London and took to anatomy with a passion, spending whole days dissecting. The combination of his skills as a draftsman and the depth of his anatomical knowledge recommended him to Gray.

The inspired collaboration lasted for just one project. By the time the work was published, Carter had moved to Bombay; here he clocked

up an extended spell in research and administration at the Grant Medical School, ending up as its principal. Hayes is as concerned with character as career, and his lively prose provides much insight into Carter's colourful but failed romantic entanglements. But we never really get much insight into just what made Carter's drawings so compellingly distinctive.

**"The emotional tension in anatomy: layers of a dead body stripped to better understand life."**

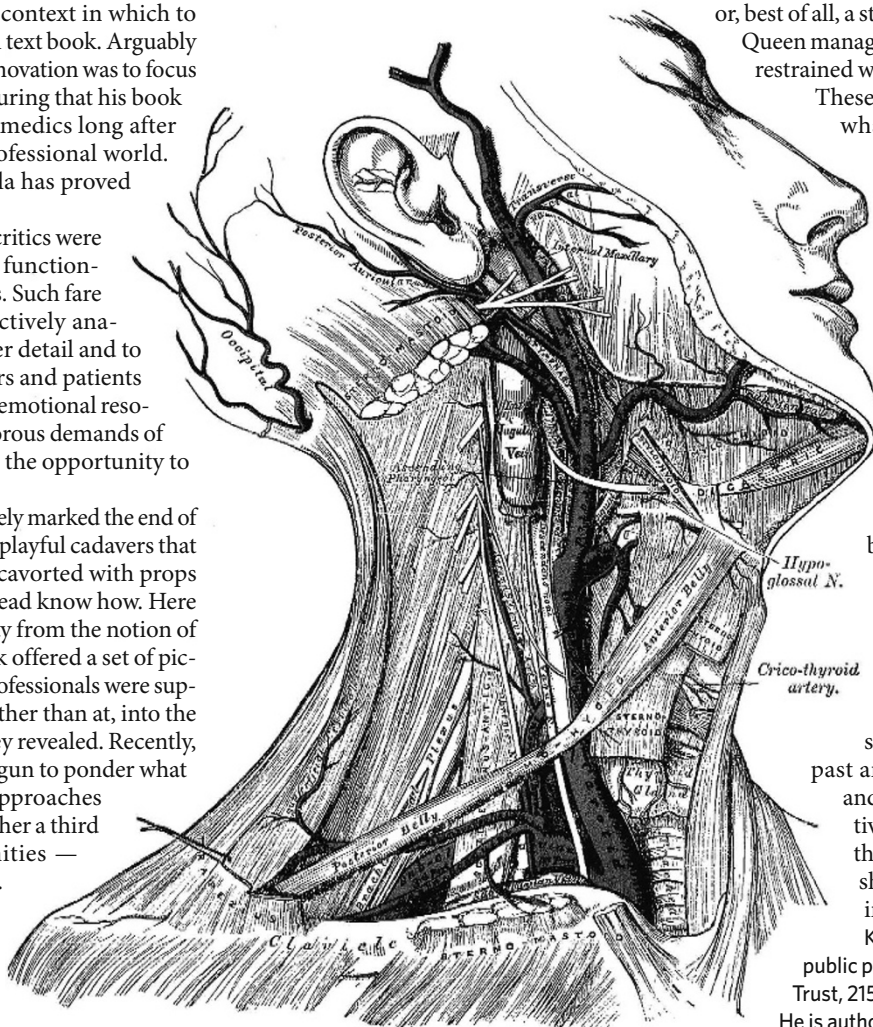
*The Anatomist* also concerns the progress of a third anatomist: Hayes himself. Early on in his research, Hayes was determined that he too should learn through scalpel and cadaver as well as lecture, library and archive. Some of his most mem-

orable writing describes the dissection classes he attended in San Francisco. We are treated to a selection of fascinating anatomical snippets about, for example, how to trace evidence of the sealed hole in the fetal heart through which the mother's blood enters; or how to find the kidney in a cadaver; or that blood flowing out of the heart is first used to feed the heart itself; or, best of all, a structural analysis of how the Queen manages to deliver such a uniquely restrained wave.

These sections allow Hayes to do what seemingly every writer must these days: he tells us about himself. Those tempted to skip over these fashionable journalistic passages might actually profit from lingering over them. It is here that Hayes really comes to grips with the emotional tension inherent in anatomical studies: the way in which layers of a dead body can be stripped away so we might better understand life.

An important work of medical history *The Anatomist* is not. It is, though, an enjoyable contribution to the burgeoning field of medical humanities, skillfully bringing together past and present, objective facts and speculations, in a provocative meditation on a text book that might well still be helping shape young medical minds in another 150 years. ■

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Neck arteries, illustrated by Henry Vandyke Carter, from the 1858 edition of *Gray's Anatomy*.

## EXHIBITION

## Beauty meets utility at MoMA

## Josie Glausiusz

A pudgy, pink, pig-like creature, lacking a head but sprouting a tuft of unruly hair, sits in a corner of the Museum of Modern Art (MoMA) in New York. *Epidermits*, a stubby-legged quadruped, was purportedly spawned from a skin-and-hair-cell culture grown from a human cheek swab, and is fed on a 'sustain solution' infused through its tail. If carefully nurtured, it could be expected to live as long as "a large dog or a donated kidney".

So says designer Stuart Karten, who claims that his ten-centimetre-long, yet-to-be-realized organism could be a pet of the future. Our ability to incorporate such fantastic ideas into everyday life is the subject of MoMA's new exhibition, *Design and the Elastic Mind*, which explores the myriad ways in which our minds rapidly adapt to technological changes. This marvellous hodge-podge of exhibits comprises 200 creations that range in size from nano-scale smiley-faces stitched together from viral DNA, to an imposing five-metre-tall sculpture by Chuck Hoberman called *Emergent Surface* — a screen of twisting and unfolding slatted steel panels that move in response to changes in light. Practical gadgets sit beside whimsical pieces such as the 'smell augmentation' plugs that artist Susana Soares invites us to stuff up our nostrils.

At their best, these devices marry beauty and utility. Martin and Erik



'Colloidal Alphabet Soup': these 7-micrometre-long polymer letters could be used to label individual cells.

Demaine, a father-and-son team from the Massachusetts Institute of Technology (MIT), created *Computational Origami* — delicately folded, interlocking paper loops that demonstrate the use of computer-aided design to squeeze large objects into small spaces. A similar concept underlies Robert Lang's origami models of the Fresnel lens for the Eyeglass Space Telescope (a mothballed project of the Lawrence Livermore National Laboratory in California). The lens, if realized, could have been scrunched up, launched and then expanded in space to a diameter of 100 metres — roughly the length of an American football field. Elegance and expediency also underlie the *Sonumbra* sculpture created by Rachel Wingfield and Mathias Gmachl, a tree-like 'sonic shade of light' that transforms peoples' movements via software into serene sounds that are reminiscent of those produced with a Tibetan singing bowl. Solar cells

embedded in the green, umbrella-like shade of *Sonumbra* harvest energy during the day to power the lights at night.

Some of the most compelling items in *Design and the Elastic Mind* are simple, yet could prove essential to populations that lack basic equipment. Bernhard Weigl's credit-card-sized 'Lab on a Card' can diagnose an intestinal infection from a small faecal sample in 20 minutes. Emili Padrós's 'Non-Stop Shoes' use the energy generated from walking and stair-climbing to run lamps and radios. Similarly, the green-keyed XO laptop computer designed by MIT's Media Lab is "lighter than a lunchbox" and has a battery that can be recharged by pulling a cord wrapped like a yo-yo. It is being distributed to schools in Uruguay, Afghanistan, Cambodia and Mexico, among others, as part of the 'One Laptop Per Child' project, a non-profit programme to deliver laptops to the world's poorest children in remote areas.

What makes the exhibition so electrifying is the imagination that drives these innovations. A charming example is a series of drawings inspired by artist Alan Outten, who challenged British primary-school children to design the future. Their inventions included 'Super-Human Mermaid', a genetically engineered human with the genes, gills and tails of a fish "in case the world floods due to pollution", and 'The Apple Phone', a tree with man-made seeds that "use nature as their energy source" to grow apple-like telephones, "so if you are having a private conversation, you just eat the apple". To quote Outten, I left the exhibition "with a sense that creativity and design are safe in the hands of the next generation". ■ Josie Glausiusz is a journalist based in New York.

***Design and the Elastic Mind* runs at the Museum of Modern Art, New York, until 12 May ([www.moma.org](http://www.moma.org)).**

The second half of *Access Denied* consists of detailed descriptions of Internet use, regulations and censorship in eight regions of the world, and in each of 40 different countries. The ONI found evidence of censorship in 26 of those 40. For the other 14 countries, it summarizes the legal and regulatory framework surrounding Internet use, and tests the results that indicated no censorship. This leads to 200 pages of rather dry reading, but it is vitally important to have this information well-documented and easily accessible. The book's data are from 2006, but the authors promise frequent updates on the ONI website.

No set of Internet censorship measures is perfect. It is often easy to find the same information on uncensored URLs, and relatively

easy to get around the filtering mechanisms and to view prohibited web pages if you know what you're doing. But most people don't have the computer skills to bypass controls, and in a country where doing so is punishable by jail — or worse — few take the risk. So even porous and ineffective attempts at censorship can become very effective socially and politically.

In 1996, Barlow said: "You are trying to ward off the virus of liberty by erecting guard posts at the frontiers of cyberspace. These may keep out the contagion for some time, but they will not work in a world that will soon be blanketed in bit-bearing media."

Brave words, but premature. Certainly, there is much more information available to many more people today than there was in

1996. But the Internet is made up of physical computers and connections that exist within national boundaries. Today's Internet still has borders and, increasingly, countries want to control what passes through them. In documenting this control, the ONI has performed an invaluable service. ■ Bruce Schneier is chief security technology officer for BT Counterpane, Santa Clara, California. He is author of *Beyond Fear: Thinking Sensibly About Security in an Uncertain World*.

## Correction

Ken Arnold's review of *The Anatomist* by Bill Hayes (*Nature* 451, 247; 2008) incorrectly said that the mother's blood enters the fetal heart through a hole. In fact, this hole lets blood move from the right to the left atrium *in utero* and is sealed after birth.