

Revolution, being mainly used for domestic fuel. What mattered was the alliance of coal, iron and steel, which was given sharp impetus by the Seven Years' War and later again by the campaigns against Napoleon. British iron- and steel-making skills, based on earlier manufacture of clocks and guns, were of a high order. One indicative story relates how the German industrialist Alfred Krupp took an assumed name and lived in Sheffield to learn the steelmakers' skills.

There is something of a paradox in the thesis of this cogent and well-researched book. A great divergence between the economic performances of Asia and Europe would be remarkable only if there had been a widespread expectation of convergence. There is little evidence that the Industrial Revolution had been expected by economists of the time to reproduce itself in the East. That is not because China, Japan and India were viewed as remote countries of which we know little, but rather because there were fundamental differences in the structure of the two regions.

First, and probably most important, were the very different legal systems. The German economist Max Weber argued that a rational legal system was necessary for the smooth functioning of a capitalistic economy. A recent study by Hernando de Soto, seeking to explain why capitalism has proved so effective in North America and Western Europe but failed to deliver in Russia, South America and Africa, points to the absence of legally enforceable property rights. Second, the Industrial Revolution was a British rather than, as Pomeranz tends to argue, a European phenomenon. He himself points out that European industrialization was still quite limited outside Britain until at least 1860 — remarkably late by UK standards.

Until the mid-nineteenth century, a small island to the north-west of continental Europe (Scots and Welsh contributed, as well as English) produced a crop of entrepreneurs possessing financial skills allied to outstanding qualities in mechanical engineering. Many were harsh, demanding and narrow-minded, as we know from the literature; but they were also honest — although one George Hudson, the subsequently disgraced 'railway king', was the exception.

Their successors fared less well, later in the nineteenth century, in the age of electrical power and the internal-combustion engine. That was another great divergence — between Britain and continental Europe, in Britain's favour, until around 1860, and from then onwards between Britain and North America and continental Europe, to Britain's disadvantage. It's a moot point whether or not this latter divergence continues. ■

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## Science in culture

### The body spectacular

#### Skeletons in the medico-artistic cupboard

Roy Porter

One of the things you first notice about the people attending *Spectacular Bodies*, a quite amazing exhibition at London's Hayward Gallery, is the complete mix it has drawn in, rather than just your usual arty crowd. And that's not surprising, for we're all fascinated by our physical reality, our flesh and blood. But what a paradox is embodied there!

Our bodies, after all, are what we're most familiar with, yet they are also the heart of darkness, all unknown. Except occasionally, by courtesy of medical technology, we never see our insides. Save when we're in pain, we never feel most of our organs. And, religious or not, we sense there's something sacrosanct, taboo — or at least profoundly private — about our innards: most of us are squeamish enough about having our outsides seen naked. And any reminder of mortality is deeply disturbing.

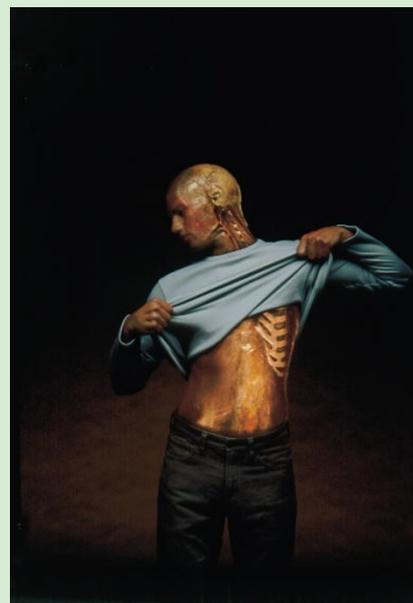
Hence the shocking nature of the traditions of scientific art and artistic science represented in the exhibition. From the Renaissance on, an unholy alliance of anatomists and artists began to dissect the human body and turn what they saw into artworks: drawings, paintings, écorchés (flayed muscle-men torsos, often holding flaps of skin aside), huge sculptures, little figurines and wax models that could be taken apart, layer by layer.

And there is something creepy besides. When a Dutch anatomist pickled a human fetus, what made him think to attach beads to its tiny hands and wrists? When wax modellers carved a torso, why did they affix curly tresses to the head, or add pubic hair, or give the faces individualized expressions? Something prurient, even pornographic, seems to be at work.

Doubtless, the draughtsmen and craftsmen had their reasons: artists did dissections so as to create objects of beauty, anatomists wielded the scalpel the better to know their pathology and be able to heal. But the question of voyeurism inevitably arises. What do we make of the pleasure that artists and anatomists so evidently derived from examining and dismembering the dead? And what of our own enjoyment?

We see, in the frontispiece to his *De Fabrica* (1543), the young Vesalius proudly displaying the inner secrets of the woman he has just dissected, most likely a criminal. Two centuries later, Hogarth presents us with a parody of that scene in his *Four Stages of Cruelty*, hinting that the true criminals are the surgeons — or perhaps us, the viewers.

Likewise, a vast canvas by André Brouillet shows Jean-Martin Charcot, the 'Napoleon of the neuroses', displaying a 'hysterical' woman, lace blouse slipping down her breasts, in front of an assembly of students. Is this medicine or is it a sex show? This exhibition's power lies in forcing us, time and again, to confront our own reactions to the skeletons in the medico-artistic cupboard. All



An advertising image based on a wax figure by Clemente Susini, 1804.

credit to the curators, Martin Kemp and Marina Wallace, for their superb achievement.

Two aspects of the exhibition were mildly disappointing, however. The top floor is devoted to the scientific aesthetics of the face. But with a few exceptions — notably Franz Xaver Messerschmidt's grinning and grimacing physiognomical busts — that section carries less force than those featuring the body at large.

And the attempt to weave modern, specially commissioned items into an exhibition that is mainly historical seems a missed opportunity. There are too few contemporary pieces to add up to more than a token appearance. And with the exception of John Isaacs' life-sized auto-torso, the modern pieces seem both too knowing and rather conventional. Here lies a paradox indeed: modern art courts the reputation of being shocking — think of Tracy Emin and Damien Hirst — but it is actually the academic artists, from Leonardo and Rembrandt to Johann Zoffany and George Stubbs, who provide the greatest jolts.

On entering the exhibition, what you see first is a series of Dutch group portraits featuring dapper doctors gathered around semi-dissected corpses. Instruments in hand, some look as if they are about to carve Sunday lunch; others seem about to give the cadaver a manicure. There is something shocking in the detachment of both the artistic and the anatomical gaze. It is an unnerving opening to an unnerving exhibition, which is not to be missed. ■

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*Spectacular Bodies: The Art and Science of the Human Body from Leonardo to Now* is at the Hayward Gallery, London, until 14 January 2001.