BOOKS & ARTS

Morals and manners in modern science

Today's research enterprise is often portrayed as impersonal and calculating, but a historical examination argues that scientists' civility to each other is what holds the venture together. **Jerome Ravetz** explains.

The Scientific Life: A Moral History of a Late Modern Vocation
by Steven Shapin
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Did the early pioneers of industrial science rely on civility and cooperation for success?

As the embodiment of objectivity, scientific knowledge has been placed at the heart of the transition to modern society. Generations of social theorists, including Max Weber, have considered the rise of rationality to be a good thing. But Weber also wrote of his regret of society's loss of 'spirit'. Today, many scientists also harbour a sense of nostalgia for the 'little science' that prevailed before the era of the atomic bomb — science that was small-scale in personnel and resources and happily autonomous. This has been supplanted by the large-scale, capital-intensive science that serves industry and is organized in an industrial mode.

In *The Scientific Life*, historian Steven Shapin asks if contemporary high-tech science is a moral enterprise. Does objectivity render scientific achievement less personal than that in the humanities, and does the scientist possess any special moral virtue? Shapin threads his way through this tangled set of issues with skill, leaving only a few loose ends.

In his 1994 book *A Social History of Truth*, Shapin analysed the importance of social conventions, notably civility, in the constitution of communities that are effective in the pursuit of scientific knowledge. In the seventeenth century, for example, Robert Boyle established the debates of the fledgling Royal Society as a way of securing trust in reports of experimental facts; this, Shapin argues, was the foundation of modern science. *The Scientific Life* moves on his theme of civility to 'late modernity' in connection with contemporary science.

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Shapin targets the past generation of sociologists of science, including founding father Robert K. Merton. Merton and his followers proclaimed that academic 'pure' science was the only real sort and that those scientists who were involved in the cash nexus were morally inferior. This focus on the purity of science has never been seriously challenged. Commercial scientists are still stigmatized and academic snobbery still rules. Shapin sets out to redress that injustice, with detailed studies of the precepts and practice of both academic and industrial research in the modern world. This change of focus is important because the pockets of science that are unaffected by commerce, or by the state, are steadily shrinking. To ignore this would be to deny the realities of today's science. After this book, that cannot happen again.

The Scientific Life should therefore be required reading for all scientists and those studying the social activity of science. After expressing the ambiguities and tensions in the scientific role, Shapin shatters myths by contrasting two views of industrial scientists, one from academia and the other from inside industry. It emerges that the founders of the great industrial labs recognized the need for independence and creativity among their scientific workers, providing them with incentives that supported the long-term welfare of the lab. Shapin points out that integrity is appreciated even in industrial science, before going on to focus on the role of morality in teamwork and in the planning of research. Because of the radical uncertainty of the 'future-making practices' of speculative, commercially oriented science, Shapin argues that the virtues of the people involved are all that one has to rely on in setting a path for the advancement of research.

Shapin sums up his argument with an anecdote: describing a farewell party at the University of California in San Diego, he is impressed by the crowd's civility. Differences in rank, prestige, wealth and influence are ignored; tact and consideration rule. It is the personal element that governs this most modern of enterprises.

Shapin uses powerful terms: moral, virtue, vocation, charisma. But he focuses on the positive attributes of social decencies. He neglects that in an individual these attributes are achieved by struggle and sacrifice, and in a group they also refer to its collective activities. Although he provides full and illuminating accounts of the social practices of different areas in contemporary science, Shapin fails to distinguish between politeness and civility on the one hand and morality on the other. And by this omission he presents an invitation to his critics.

The dark side

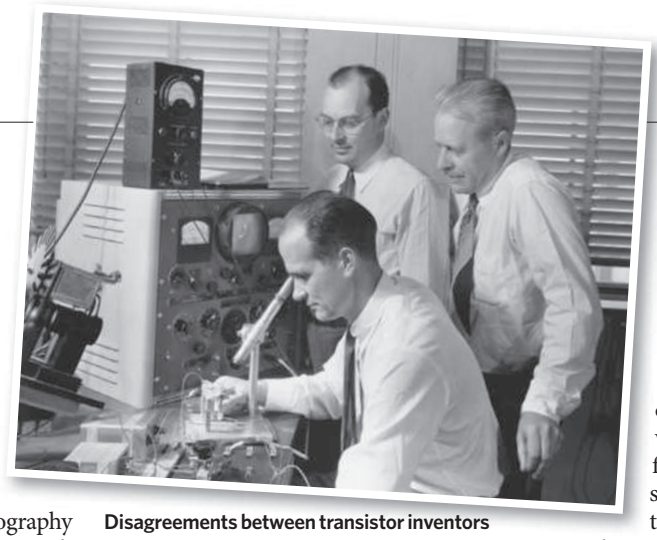
As a historian, Shapin will know of counter-examples to his thesis that 'manners maketh man'. Most notable is the impression created by the Royal Society on the young writer Voltaire during his visit to England in 1727. Voltaire remarked most favourably on the gravity and courtesy of the English, a civility — in the tradition of Boyle — that was so refreshingly different from the disputatious style of the French. Yet a few insiders at the Royal Society then knew a secret that would wait for more than a century to be exposed: the society's

good name had recently been used in the character assassination of Gottfried Leibniz, the German philosophical genius and protégé of the future King George I of Great Britain and Ireland. Isaac Newton himself had secretly masterminded the attack, personally embellishing the society's dossier about Leibniz's supposed plagiarism of the calculus during a visit to London in 1676. In this case, civility did not ensure morality, of any sort.

Shapin is completely aware of this dark side of science. His excellent bibliography lists the writings of many respected voices, such as Sheldon Krimsky in *Science in the Private Interest*, complaining about morally dubious practices in science. But their critical perspective never appears in his narrative. One would not know from reading *The Scientific Life* that Shapin has published many essays showing deep sympathy with those who offer such complaint. For example, he writes of Craig Venter, who has pioneered the creation of new life forms for private profit. He answers objections as they are raised, but the deeper issues of the safety and morality of Venter's enterprise are ignored.

Shapin's study is neither a sources-based history of the past nor an empirical social-science analysis of the present. It is instead an extended insightful essay. This genre enriches public debate — be it by an academic, as in David Riesman's *The Lonely Crowd* or Robert Putnam's *Bowling Alone*, or the product of a distinguished journalist, such as James Fallows's classic *National Defense*. Through his many writings on science, Shapin has become one of these public intellectuals. But Shapin's book lacks a critical edge. It is as if he has been so seduced by civility, ancient and modern, that he has devoted his great talents to extolling its virtues.

For a scholar of Shapin's stature, it is inappropriate simply to say that he has forgotten his own critical awareness. He is serious in his use of ethically charged terms. I see this controversial element as a symptom of an unresolved problem in a bigger endeavour: those who promoted the organization of societies around objective scientific rationality, such as Weber, were not talking merely about more education and more knowledge. In the Enlightenment movement that flourished through the eighteenth and nineteenth centuries, science was seen as the main weapon against the obscurantism that drew on dogma and superstition. Impersonal science was therefore seen as the key to both real knowledge and a good society. In the intervening period, that early vision of science has been badly damaged. Today, public distrust has become widespread.



BELL LABS/AIP EMILIO SEGRE VISUAL ARCHIVES

Disagreements between transistor inventors William Shockley (seated), John Bardeen (left) and Walter Brattain ended their fruitful collaboration.

Shapin, however, believes that in today's industrialized science, the politeness and civility of pre-modern communities persist. They are essential, he thinks, because of the uncertainties that beset this science. In rapidly moving fields such as synthetic biology, scientists must rely heavily on each others' virtue. In that way, for him, even scientific entrepreneurs are creating microcosms of a good society. Neither modernity nor industrialization needs to be dehumanizing. Regardless of the imperfections of his current evidence, and the counter-examples that can be adduced, that is a thesis that deserves respect and critical engagement.

I have a final reflection. Had Shapin chosen to study the mathematicians who are employed in the world of finance, he might well have found similar patterns of civilized interaction and similar evidence of individual moral virtues. Yet we now know that the collective endeavour of these other very nice entrepreneurial scientists has resulted in the creation of a mountain of toxic fake securities. A sobering thought. ■

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Natural selection and the nation

Banquet at Delmonico's: Great Minds, the Gilded Age, and the Triumph of Evolution in America
by Barry Werth
Random House: 2009. 400 pp. $27

"There is apparently much truth in the belief that the wonderful progress of the United States, as well as the character of the people, are the results of natural selection," wrote Charles Darwin in *The Descent of Man*. Today, such a claim jars, and not just because of the grammar. But the wonder is that Darwin so infrequently over-extended his evolutionary explanations.

Not so his English contemporary, Herbert Spencer, who attempted to give an evolutionary account of almost every realm of human affairs. Ruminating on history, psychology, sociology and ethics, Spencer's evolutionary philosophy led him to argue that, among other things, government regulation was bad, the poor and needy should be left to fend for themselves, and the United States was destined to become the pinnacle of civilization. These ideas fell on fertile ground, particularly in the United States, and Spencer was hailed there as the brightest, most insightful man of his generation.

Banquet at Delmonico's, titled after an 1882 dinner to honour Spencer at a New York restaurant, covers the elite's battle for ideas during the turbulent years of the 1870s and 1880s. The nation was emerging from a bitter civil war that had led many to question the benevolence of God. It was obvious that the country was about to transform itself from an underpopulated minor player to a world-dominating industrial giant, and its direction and politics were up for grabs. The issues of the times were challenging: credit crunches, presidential unpopularity, disputed elections, terrorist atrocities, military blunders, and arguments about the nature of marriage, race relations and intelligent design. Manhattan got electrical lighting, Pittsburgh got steel and General Custer got annihilated.

Spencer's US acolytes included powerful industrialists, politicians, religious leaders and intellectuals. In a beautifully written classic of non-fiction narrative, author Barry Werth tracks Spencer and associated characters as they try to use evolutionary doctrine to perfect humankind and society, often attempting to take the credit. The startling cast includes the liberal Christian minister and alleged adulterer Henry Ward Beecher, the first female candidate for US president, Victoria Woodhull, and the publisher and self-flagellating scientific crusader Edward Youmans. Among the academics are Harvard University's John Fiske, who believed in the country's divine destiny, Louis Agassiz, who believed human races were