

Book Review

Leaps In The Dark. The Making Of Scientific Reputations, by John Waller

(Oxford University Press, 2004) 292 pp.,
ISBN 0-19-280484-7; \$24.95 hardcover)

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Not long ago the winners of the 2006 Nobel Prizes in science were announced. This year's choices appear to have been non-controversial, though that has not always been the case. I have occasionally heard colleagues complain that someone got the prize less for scientific achievements than for good publicity or a large body of good, but not really exceptional work, or that the prize should have been shared with some else. Perhaps these complaints are nothing more than sour grapes, but the uneasy possibility exists that some might not be entirely baseless.

While the idealistic view of science might lead one to expect – or at least hope – that the system of independent verification and peer review might ensure that credit is allocated fairly, rewards given equitably, and misattributions of credit corrected promptly, science is a human endeavor, practiced not by brilliant, disinterested automatons, but by people who do not check their humanity at the laboratory door. The passions and competitive spirit that draw them to the laboratory in the quest for knowledge also fuel the quest for recognition of their achievements, and human frailties, such as greed or simple dishonesty, have certainly led to misattribution, fabrication of data or plagiarism. Yet, the scientific community generally seems to support the notion that the truth will always win out, and that a person's scientific reputation will be a faithful reflection of the quality of their body of work.

Leaps In The Dark: The Making Of Scientific Reputations, by John Waller, takes on the topic of how reputations in science are made (or unmade), focusing on several case studies of scientists who have either not received credit that was their due, or who have either received more than their fair share of credit, or who are given credit for things they never did. Ten years ago I read an intriguing book entitled *Lies My Teacher Told Me*, in which the author pointed out that many topics in American History books are presented in either a misleading or an incorrect way. In a sense, *Leaps In The Dark* falls into a similar

genre. However, Waller, a Lecturer in the History of Medicine and Biology at the University of Melbourne, is not a muckraker, but a serious historian of science.

Waller divides his book into four parts, the first of which (“Falling From Grace”) deals with case studies of several otherwise excellent scientists whose negative reputations derive from the fact that they took positions that were consistent with the best science of the time, but that ultimately were shown to be incorrect (a case of “the evil that men do lives after them; the good is oft interred with their bones”). For instance, he profiles Lazzaro Spallanzani (1729-1799), the Italian biologist who devised numerous elaborate experiments to test the theory of preformationism — the idea that living beings exist fully-formed in miniature in the egg or the sperm, merely growing into their full size during gestation rather than developing. While the theory was ultimately shown to be incorrect, much evidence appeared to support it at the time, and countervailing evidence only emerged slowly, and Spallanzani’s championing of it was eminently sensible in the light of what was considered good science at the time. Only the advantage of hindsight makes his experiments appear laughable, yet this, rather than his many other achievements and facility as an investigator, are what Spallanzani is remembered for, and he is often treated as a scientific joke, rather than someone who happened to be on the wrong end of a serious scientific debate.

Waller next turns to cases of what he calls the “Eureka!” moment — the blinding flash of insight or the critical experiment that ushers in a new paradigm that brings clarity and organization to what was heretofore a chaotic mass of baffling data. For example, Archimedes soaking in his bath, Kekulé dozing by the fire, Newton relaxing under the apple tree. Waller examines three cases — Newton’s development of his theory of light and color, James Lind’s discovery that scurvy can be cured and prevented by citrus fruits, and Semmelweis’ linking poor hygiene to childbed fever — and shows convincingly that the truth is vastly more complex than the simplistic, almost moralistic tales that are often repeated. As Waller puts it,

“Writers weaned on the romantic tropes of great-man history have not only tended to exaggerate the clarity of our subjects’ experiments. In the case of Semmelweis and Lind, many have also overstated the similarities between their ideas and modern orthodoxies. ... Blundering in with a ready-made template comprising a Eureka moment, a decisive experiment, and an ignorant opposition really won’t do.”

The third section of *Leaps In The Dark* (“Heroes Made To Measure”) deals with cases of two people — Johann Weyer (1515-1588) and Philippe Pinel (1745-1828) — widely regarded as heroic figures who became the “fathers” of modern clinical psychiatry, Weyer by opposing the Inquisition and insisting that insanity was not the result of demonic possession, and Pinel by initiating the humane treatment of the insane by marching into

two Parisian madhouses and ordering the unshackling of hundreds of brutalized inmates. Unfortunately, neither ever actually did what was attributed to him. Rather, Waller's analysis shows that both were made into heroic figures by members of an insecure profession (psychiatry) seeking to establish its credentials as a true scientific discipline.

Waller closes his book by examining cases of people falsely credited with scientific discoveries, which they either misappropriated from coworkers or for which they claimed undue credit ("Do-it-yourself Heroes"). Unlike the rest of the book, where the reasons for the misattributions of credit examined in the previous two sections, while wrong, are relatively benign, the two cases profiled here seem to illuminate the dark side of the scientific psyche, the deliberate "theft" of credit legitimately due co-workers by individuals intent on claiming the rewards for themselves. If there are real miscreants in *Leaps In The Dark*, they may be here: Robert Watson-Watt, the British scientist widely known as the sole inventor of radar, and Selman Waksman, discoverer of streptomycin, both of whom, Waller argues, used their positions to claim full credit — and the attendant financial rewards — for the discoveries by minimizing or suppressing the contributions of a number of coworkers.

Leaps In The Dark made interesting and enjoyable reading. Waller has a clear and readable style, and convincingly supports his point that, although the modus operandi of science is effective at detecting and correcting errors of scientific fact or interpretation, whether intentional or unintentional, issues of credit and attribution are influenced by the social context of the times. While Waller stands firmly on the side of science in the culture wars, rejecting the assertion that all of scientific knowledge is culturally determined, *Leaps In The Dark* makes it clear that "certain ideas have been much more likely to arise and to strike a sympathetic chord in certain times and places than in others. Social, economic, and political factors introduce a degree of contingency that must be factored into our accounts of scientific discovery."