
Reconciling Science with Social Justice

a review of

Making Genes, Making Waves: A Social Activist in Science by Jon Beckwith

ISBN-0674009282, Harvard University Press, October 2002, 256 pages, hardback, \$27.95.

Reviewed by **Sheldon Krimsky**

In a 1928 lecture, evolutionary biologist J.B.S. Haldane stated that “by complicating life, science creates new opportunities of wrong doing.”¹ Physicists understood this after the discovery of nuclear fission. It took biologists another thirty years to fully grasp the meaning of Haldane’s insight. Jon Beckwith, a molecular geneticist at the Harvard Medical School, has written a poignant and soul-searching memoir about two passions in his life—science and social justice, and how he became reconciled to their co-existence.

Beckwith begins his story by describing his reunion with a fellow graduate student at Harvard whom he had not seen for 35 years. This young biologist, full of promise, had given up science to take up quail farming in Normandy, France. He confided to Beckwith: “I really became convinced that science was being used in ways that were far more destructive than beneficial to people” (p. 10).

With that introduction, Beckwith sets up the tension that lingers throughout the book about whether he chose the right career path. “I write this book to make the case that a scientist can pursue a productive scientific career and still be a social activist within science” (p. 83).

Beckwith’s impulse to follow a moral path in science meant being a witness to possible wrongdoing, but not just any wrongdoing. It was to bear witness to wrongdoing *within* science. He questioned why so few geneticists were aware of the eugenics ideology that went largely uncriticized within the scientific community during the first decades of the 20th century.

The shaping of a political consciousness is a complex process. Socialization takes place at different levels. The education of scientists does not ordinarily reinforce their defiance against tradition and authority outside of the laboratory. But it does instill in fledgling scientists the idea that they can overthrow a theory or hypothesis or start a new path of research. When Beckwith had proven that the eminent French biologist

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François Jacob and his colleagues were mistaken about the site of the mutations that affected the ability of *E. coli* to use lactose, he had indeed fulfilled his role as a scientist but also had turned a critical corner in his career. All professors understand that when students are intellectually mature enough to challenge or refute them, they have come of age. Beckwith recalls with admiration, Jacob's own words about scientific change. "If we didn't want to stand around rehashing the same old questions, we needed the courage to abandon old lines of research and old models, to turn to new problems and study them with more suitable organisms" (p. 87).

The shaping of Beckwith's political consciousness is not explained by his scientific education or his employment at Harvard. But there were other influences. He was drawn to the writers of the Beat Generation, to the struggle of Black activists, to those who challenged the abuse of civil liberties during the McCarthy hearings, and to Robert Oppenheimer's public humiliation after expressing his remorse over nuclear weapons.

While searching for his own moral voice in the mélange of civil rights and antiwar activities of the 1960s, Beckwith had a proverbial "coming out" event in 1969, which was linked to a noteworthy scientific result. His research group had devised a clever way to isolate the bacterial *lac* gene, several years before the new techniques in recombinant DNA routinized such processes. In tandem with the publication in *Nature* of the result that the first gene had been isolated, Beckwith and two colleagues involved in the study held a press conference. They issued a warning of the possible applications of this technique or others yet to come that could be used to manipulate the genes of human beings. The public drama of what they had done continued on the popular TV news program, the *Today Show*, when Beckwith's colleague, Jim Shapiro, announced to the national audience that he would no longer continue doing science. The reaction to their press conference and subsequent media attention from colleagues was predictably hostile. Some scientists were concerned that an adverse public reaction to genetic research could affect its funding and thus their livelihoods.

This response by scientists is in stark contrast to the respect that biologists received in 1973 and 1974 when a group of signatories alerted society to the potential dangers of recombinant DNA techniques. While Beckwith and his colleagues were viewed as pariahs for their expression of concern, Maxine Singer, Paul Berg and others were canonized for their responsible behavior in alerting the scientific community to potential biohazards of genetic research.

Beckwith doesn't explore the differences in these reactions. But those differences tell us a great deal about the response of the scientific community to the ethics of genetic research. The inadvertent potential dangers of biohazards from genetically engineered organisms turned out to be a justifiable area of responsible scientific conduct for most biologists. But scientists had far less tolerance for colleagues who raised concerns about the social uses of biology. The former was about the means to an end, namely the study of biological systems; the latter was about the ends themselves. To what use would that knowledge be put?

The French philosopher Henri Poincaré described the separation of domains of ethics and science in his book *The Value of Science* (1905): "Ethics and science have

their own domains, which touch but do not interpenetrate. The one shows us to what goal we should aspire, the other, given the goal, tells us how to attain it. So they can never conflict, since they can never meet."² But the means and ends of biology are not easily separable. Rarely is there a great public debate about what should be done after science discovers what can be done. Even though there was more of a debate about slowing things down when biohazards were the issue, there was never any serious consideration among scientists that certain experiments should not be done because of how the results might be applied.

Beckwith has written a sensitive and honest memoir. He is not beyond admitting his errors of judgment and sharing what he learned from his activist experience. He takes us into the XYY and sociobiology controversies and describes his participation in one of the most influential scientific activist groups of the late 20th century—Science for the People. He helps us to see the parallels between the pursuit of justice and the pursuit of knowledge. Criticism, skepticism and self-examination are virtues in both pursuits, while dogmatism and blind acceptance are vices. He also shares his personal concerns about self-delusion and cooptation.

Making Genes, Making Wave is, as the title suggests, the memoir of a scientist who remained on the inside of science, even as some students and colleagues left, to serve as a moral irritant to his colleagues and as an informant to society that an enlightened science must not separate means from ends. Whereas most scientists spend their entire lives oblivious to the socio-political aspects of their work, Beckwith emerged as one of our most informed and respected voices in exposing the fallacies and abuses of behavioral genetics and in alerting society to the perils of eugenics and genetic discrimination.

REFERENCES

1. Haldane, J.B.S. (1932) *Science and Human Life*. New York: Harper & Brothers, p. 101.
2. Poincaré, H. (1929) "The Value of Science" In: *The Foundations of Science*, G.B. Halsted, transl. New York: The Science Press, p. 206.