

New Images of Scientist-Activists

Gary Werskey (2008), in his article, “The Marxist Critique of Capitalist Science: A History in Three Movements?” describes two eras during which scientists applied their status as knowledge-producers to conduct coordinated activism for social progress. Werskey, unfortunately, restricts his historical survey to the activities of men in England during the 1930s-1940s and the 1960s-1970s.

I was intrigued to learn about these movements, as much of my own work has been trying to bring science and scientists to the policy arena – both currently practicing scientists and scientists-in-training who otherwise perceive science as wholly objective and unbiased. In this light, Werskey’s limited perception of the scientist-activist was frustrating.

My questions became, what is a scientist-activist, anyway? Are there other models of scientist-activist? And if there are other models, can we teach a new definition of the scientist-as-activist to scientists of all descriptions?

What is a scientist-activist?

Some might see the term scientist-activist as an oxymoron (McGill U. blog, 2008), the objective, fact-obsessed scientist serving as stark contrast to the half-crazed, illogical and knee-jerk activist.

Esa Valiverronen (2001) identified seven roles for scientists described by the media over the course of a debate around sustainable forestry practices in Finland. Table 1 lists the roles and their functions.

Table 1. Media Representations of Scientists’ Roles (Valiverronen, 2001)

Roles	Functions
Popularizer	Presenting new research results
Interpreter	Interpreting new phenomena and problems
Advisor/Advocate	Making and commenting on policy claims
Promoter	Raising funds or promoting research
Manager	Rendering account for use of public funds
Critic	Commenting on research results

In a broad sense, scientists who serve in any of these roles could be called scientist-activists. Each role requires the scientist to step out of their narrow research-oriented frame and the comfort of the traditional culture of science to engage in greater society. I find these definitions too narrow, based on research into definitions and models of scientist-activists. Valiverronen’s functional categories – developed on the basis of a single-issue case study – restrict the range of scientist-activism. Many scientists have stepped beyond specific scientific issues to influence broader policy and issue arenas, for example social and environmental justice, peace work, and politics. This paper provides examples of four types of scientist-activists: Advocates, Organizers, Promoters, and Activists. The following section defines these types and provides varied descriptions of their respective activities from other sources.

Advocates. These working scientists step outside of their institutional roles to act in the public sphere, on policy and politics.

“[The liberal scientists of 1930s England] modeled the role of a successful scientist-activist. For they combined high scientific status and achievement with a willingness to risk their reputations as ‘sound’ men...to do good work and benefit society.” (Werskey, 2008)

Organizers. This type includes “working scientists active in changing the institutions of science themselves” (Fausto-Sterling, 2009) from within the system.

“The first step in political radicalization of intellectual labor is *not* to ask for more and better jobs, mainly in research, development, and teaching, in order to fully employ everyone to his or her capacity. No, the first step... is to question the nature, the significance and the relevance of *science itself as it is practiced now*, and to question thereby the role of scientific workers.” (Gorz 1980)

“In an attempt to get around these artificial barriers and inconsistencies [regarding women’s roles in science], early women scientists developed...strategies...of two sorts. One was the idealistic, liberal-to-radical, and often confrontational strategy...writing angry letters and otherwise documenting the “unfairness” of the unequal opportunities open to men and women.” (Rossiter, 1982)

Promoters. Working scientists who engage in public conversation to promote research science as an institution, the scientific pursuit itself (perhaps via links with elementary and secondary educational systems), and especially funding for continued research.

“The Scientist Activist, reporting from the crossroads of science and politics... takes on the people and obstacles standing in the way of the progress and proper application of science...defending scientific and social progress.” (Anthis, 2006)

Scientists should “get involved in science-related public issues and to learn to lobby.” (Garfield, 1988)

Activists. Some scientists have merged their political agendas with their scientific work, and apply their research to promote social change. Their activities may extend to “grassroots, confrontational activism.” (Fausto-Sterling, 2009)

Knowledge and knowledge-makers taking part in political and community activism (Frickel, 2005).

“Conventional behavior in pursuit of contentious goals can sometimes produce significant sociopolitical change...redirecting research and science policy, not undermining or remaking it...carried out collectively.” (Frickel, 2006)

According to Basava (a Hindi Saint), “‘doing good work is Heavenly’ and ‘there can be nothing more sacred than work.’ Closely associated with the sacredness of work was the sacredness of sharing. The gifts received from society through ones labour should be shared.” (Shiva, 2005)

“...take action to create a healthy environment and a safer world.” (UCS, 2009)

“scientists, engineers and other innovators [have] an ethical obligation to bring their knowledge and experience to bear on critical national decisions...” (FAS, 2009)

The scientist-activist’s role is to “get independent science to the public and to promote science that’s socially accountable and ecologically sustainable.” (Ho, 2007)

“It should not be imagined that scientists who make public statements or join rallies are being more political than those who remain in their offices and laboratories. The latter group cannot escape the structural influences of funding, bureaucratisation and selective usefulness of scientific results. Their research is inevitably value-laden due to the values embedded in the context of their research, both organisationally and theoretically.^[3] Those who become 'socially active' are merely being more overt in attempting to link their values and their actions.” (Martin, 2006)

Are there other models of the scientist-activist?

As Frickel (2006, p.206) points out, the Advocate and Activist types – because they are stepping outside of the institution of science -- are more likely to be “older, established researchers with tenure” who run less risk of repercussions. So, in contrast to the scientists of “high scientific achievement and... reputations” of which Werskey (2008) writes, Rossiter (1982, p. xvii) describes female scientist-activists as women who advocated for a place for themselves (and rarely, other women) in professional scientist positions (i.e., Organizers). Even as their numbers were increasing in undergraduate- and graduate-level science programs (Rossiter 1982, p. 52), paid positions were limited both hierarchically (i.e., lower-status and low-pay positions) and territorially (i.e., in “women’s” fields such as home economics). Some women, rather than fight to enter the professional sphere, conducted research in their own backyards and children’s nurseries (e.g., ornithologist Margaret Morse Nice) or otherwise kept themselves in the field with “private research” (Rossiter 1982, pp 276, 139-142).

Membership in professional societies was overwhelmingly closed to women (Rossiter 1982, p. 73), which also kept them isolated from the realms of professional science that would gain them broad recognition (Rossiter 1982, p. 268).

Recognition for women and people of color has continued in the same pattern to the present time. Table 2 contains statistics on several listings of “achievement” and awards earned by scientists, including:

- (Star) Top 1000 scientists listing, indicated by stars in “American Men of Science,” a directory published between 1906 and 1943 by statistician James McKeen Cattell. (Rossiter 1982, p 291)
- (WoS) Included as a scientist biography on “Eric Weisstein's World of Science,” a website promoted as a resource for students. (Weisstein, 2009)

- (AA) Listing by the Academy of Achievement, with the goal of “bring[ing] the inspiring life stories of the eminent achievers of our time to the fingertips of every student, teacher and parent...” (Academy of Achievement, 2009)
- (ASO) Listing on the PBS webpage “A Science Odyssey,” which includes “the men and women responsible for the 20th century's greatest science achievements” (PBS, 1998)

Table 2. Recognition of “important” scientists by multiple measures

recognition	total listed	women (#, %)	men(m), women(w) of color (#,%)
Star	1369	27, 2.0	unk
WoS	1071	19, 1.8	20m, 1.9 1f <0.1
AA	38	5, 13	3w, 0.8
ASO	52	8, 15	2m, 0.4

Consider another example, a website containing online resources for students associated with the PBS television program, “A Science Odyssey: People and Discoveries.” The site lists 68 “significant stories from a remarkable century of discovery” between 1900-1996 – and only 4 reference women and/or people of color (PBS, 1998), mentions that are buried in the links:

1. “1953 Watson and Crick describe structure of DNA” (provides due credit to R Franklin within item text at <http://www.pbs.org/wgbh/aso/databank/entries/do53dn.html>)
2. “1959 Leakey family discovers human ancestors” (Louis, Mary, Jonathan; <http://www.pbs.org/wgbh/aso/databank/entries/do59le.html>)
3. “1962 Silent Spring published” (not “Rachel Carson publishes *Silent Spring*” <http://www.pbs.org/wgbh/aso/databank/entries/dt62si.html>)
4. “1975 Role of endorphins discovered” (Choh Hao Li not mentioned by name in title; <http://www.pbs.org/wgbh/aso/databank/entries/dh75en.html>)

While it is difficult find information about (or even names of) successful women in science, it is even more rare to find examples of female scientists and scientists of color taking on the Activist and Advocate roles.¹ For example, Table 3 provides statistics on gender and race representation with two awards presented to scientists for work in the realm of social justice:

- (Nobel) The Nobel Peace Prize (assumed in this case to highlight scientist-activists, as opposed to the science prizes).
- (PWM) The Public Welfare Medal, presented by the U.S. National Academy of Sciences “in recognition of distinguished contributions in the application of science to the public welfare” (NAS, 2008).

¹ In fact, when women are identified in current times as activists by conservative commentators and corporations, it is with derision, and questioning of their underlying science credentials (see, e.g., Poynter, 2008 and Center for Consumer Freedom, n.d.). This harkens back to the reaction to Rachel Carson’s call to action, “*Silent Spring*.” (Lear, 1997)

Table 3. Recognition for scientist-activists; proportion of women and people of color. (NAS, 2009)

recognition	total awarded	total scientists (#, %)	women (#, % of scientists)	men, women of color (#, % of scientists)
Nobel	96	4, 4	2, 50	1m, 25 1w 25
PWM	68	59, 87	4, 6	1m, 0.1; 1f, 0.1

Table 4 is a sampling of scientist-activists identified – essentially at random, but seeking representation from multiple settings and backgrounds – who can serve as new models for scientist-activists-to-be.

How can we inspire more scientist-activists?

Werskey (2008), at the end of his article, asks if a 3rd movement is possible. To which I answer, only if a broad swath of scientists take up the work that needs to be done on so many issues, from preparing for impacts of climate change to serving the needs of underserved populations across the globe.

To encourage collective and concerted action in the U.S., I recommend three initiatives:

1. Convene a meeting of organizations providing venues in which Advocates can take action – e.g., Union of Concerned Scientists, Federation of American Scientists, and others as identified – to:
 - Share best practices for recruiting and motivating scientists to take part in public debate. Maybe some good role models will prompt more scientists to take up the challenge.
 - Explore the utility of a joint clearinghouse, collaborative training, and/or conferences for Advocates.
 - Plan a “year of action” in which projects and initiatives by Advocates are highlighted in the media, which will expose the public to the idea of scientist-activists.

2. Establish a Journal of Activist Research (perhaps more utilitarian and research-oriented than the new “Science for the People” [www.scienceforthepeople.com]) to facilitate sharing of findings and application of research to social problems. Grassroots and community-based activism, because of its low-budget nature and immediacy, is seldom shared beyond the immediate locus, but scientists working in those arenas should have a venue for sharing research tools, methods, and findings across issues and locations.

3. (In the best of all possible worlds:) Bring representatives of all science-activist types to the table to identify issues of common concern, trends that cut across all areas of activism, and identify joint efforts to address institutional and cultural roadblocks thwarting progress on all fronts.

Sources

Academy of Achievement. 2008. "David Ho, MD." Accessed at <http://www.achievement.org/autodoc/page/hoaoint-6> 3/2/2009

Anthis, Nick. 2006 to present. Accessed at <http://scienceblogs.com/scientificactivist/> 2/22/2009

Center for Consumer Freedom, nd. "Mercury Facts: Scientists or Activists?" Accessed at <http://www.mercuryfacts.org/activists.cfm> 3/2/2009

Dyck, Lillian Eva. 2005. "Biography." Accessed at <http://sen.parl.gc.ca/ldyck/html/eng/o3biography.html> 2/27/2009

Eco books. 2009. "Vandana Shiva." Accessed at <http://www.ecobooks.com/authors/shiva.htm> 3/2/2009

The Federation of American Scientists (FAS). 2009. "The Federation of American Scientists." Accessed at <http://www.fas.org/member/index.html> 2/28/2009

Fausto-Sterling, Anne. 2009. Personal email communication, 3/11/32009

Frickel, Scott, 2005. "Becoming a scientist-activist: Institutional change and the emergence of contentious identities in environmental health research," Abstract presented at the International Society for the History, Philosophy, and Social Studies of Biology. Accessed at <http://www.ishpssb.org/ocs/viewabstract.php?id=213> 2/22/2009

Frickel, Scott (2006). *When Convention Becomes Contentious: Organizing Science Activism in Genetic Toxicology* In: *The New Political Sociology of Science: Institutions, Networks and Power*. Scott Frickel and Kelly Moore, Eds. University of Wisconsin Press. Accessed at <http://books.google.com/books?id=B5UrOzBEEpsC&printsec=frontcover> 3/2/2009

Garfield, Eugene. 1991. "A Handbook for Activist Scientists" Reprinted from *THE SCIENTLWCID* 2(4):7,22 February 1988. *Essays of an Information Scientist: Science Reviews, Journalism Inventiveness and Other Essays*, Vol:14, p.288. Accessed at <http://www.garfield.library.upenn.edu/essays/v14p288y1991.pdf> 2/22/2009

Haberman, Frederick W. (Ed.) 1972. "Ralph Bunche." In *Nobel Lectures, Peace 1926-1950*. Amsterdam: Elsevier Publishing Company. Accessed at http://nobelprize.org/nobel_prizes/peace/laureates/1950/bunche-bio.html 3/1/2009.

Ho, Mae Wan. 2007. "The Importance of Being a Science Activist." Lecture presented at the launch of *Confessions to a Serial Womaniser* by Zerbano Gifford (www.ashacentre.org), Nehru Centre, London, 1 October 2007. Accessed at <http://www.i-sis.org.uk/ScienceActivist.php> 2/22/2009.

Lear, Linda. 1997. *Rachel Carson: Witness for Nature*. New York: Henry Holt. As cited in Wikipedia, entry: Rachel Carson. Accessed at http://en.wikipedia.org/wiki/Rachel_Carson 3/2/2009.

Martin, Brian, 2006. "Strategies for Alternative Science" In Scott Frickel and Kelly Moore (eds.), *The New Political Sociology of Science: Institutions, Networks, and Power* (Madison, WI: University of Wisconsin Press, 2006), pp. 272-298. Accessed at <http://www.uow.edu.au/arts/sts/bmartin/pubs/o6Frickel.html> 3/1/2009

NAS (National Academies of Science). 2009. "The Public Welfare Medal." Accessed at http://www.nasonline.org/site/PageServer?pagename=AWARDS_pwm 2/22/2009, 3/5/2009

Nganga, Liz, 2004. "Scientist-turned-activist wins Nobel Peace Prize." accessed at <http://www.scidev.net/en/news/scientistturnedactivist-wins-nobel-peace-prize.html> 2/22/2009.

PBS (U.S. Public Broadcasting Service). 1998. "People and Discoveries." Accessed at <http://www.pbs.org/wgbh/aso/databank/>; <http://www.pbs.org/wgbh/aso/databank/eventindex.html>; 2/28/2009

Poynter, Mark, 2008. "Blurring the lines between science and political activism." (on behalf of the Institute of Foresters in Australia) accessed from <http://www.onlineopinion.com.au/view.asp?article=8094&page=0>

Rossiter, Margaret. 1982. *Women Scientists in America: Struggles and Strategies to 1940*. Baltimore: Johns Hopkins Press. 439 pp

Shiva, Vandana. 2005. "Work is Worship." Accessed at <http://www.zmag.org/znet/viewArticle/7038> 2/28/2009

Sicherman, Barbara. 1984. *Alice Hamilton: A Life in Letters*. Chicago: University of Illinois Press. 488 pp

UCS (Union of Concerned Scientists). 2009. "UCS Activist Resource Center." Accessed at <http://www.ucsus.org/action/activist-resource-center.html> 3/1/2009

University of Chicago. 2004. News Release: Melba Phillips, physicist, 1907-2004. Accessed at <http://www-news.uchicago.edu/releases/04/041116.phillips.shtml> 2/26/2009

Valiveronen, Esa. 2001. "Popularisers, Interpreters, Advocates, Managers, and Critics: Framing Science and Scientists in the Media." pp 39-47 In: *Nordicom Review* 2/2001 (Ulla Carlsson, Ed.). 102pp Accessed at http://www.nordicom.gu.se/?portal=publ&main=info_publ2.php&ex=34& 3/17/2009

Werskey, Gary. 2008. "The Marxist Critique of Capitalist Science: A History in Three Movements?" Accessed at <http://human-nature.com/science-as-culture/werskey.html> 2/25/2009

Table 4. Diverse scientist-activists: an non-statistical sample

name	m/f	race	award	country	era	science field	activism field	source
Wangari Maathai	F	black	Nobel Peace Prize Right Livelihood Award (the "alternative Nobel Peace Prize")	Kenya	1970s to present	environment	forest conservation	Nganza, 2004
Vandana Shiva	F	asian		India	1970s to present	physics	environment; food & water distribution; genetic engineering	Eco Books, 2009
Melba Phillips	F	european		U.S.	1940s to 1980s	physics	vs. nuclear weapons; co-founder of Federation of Atomic Scientists	University of Chicago, 2004
Mae Wan Ho Alice Hamilton	F F	asian european		England U.S.	present to 1920s 1920s to 1970s	genetics medicine	genetically modified organisms; genetics ethics industrial hygiene	Ho, 2007 Sicherman, 1984
David Ho	M	asian	National Aboriginal Foundation Lifetime Achievement Award	U.S.	present to 1990s	medicine	AIDS	AA, 2008
Lillian Dyck	F	aborigine		Canada	present to 1990s	neurochemist social science/ anthropology	Senate, women in science	Dyck, 2005
Ralph Bunche	M	black	Nobel Peace Prize	U.S.	1950s	anthropology	international peace negotiations	Haberman, 1972