

A conversation with Dr. Arthur Bienenstock on March 17, 2014

Participants

- Arthur Bienenstock – Professor Emeritus of Photon Science, Special Assistant to the President for Federal Research Policy, Stanford University
- Holden Karnofsky – Co-Founder & Co-Executive Director, GiveWell
- Dario Amodè – Postdoctoral Research Fellow, Stanford School of Medicine

Note: This set of notes was compiled by GiveWell and gives an overview of the major points made by Dr. Arthur Bienenstock.

Summary

GiveWell spoke with Dr. Arthur Bienenstock as part of its investigation of scientific research funding. Conversation topics included: trends in national research funding, strategies for science research, and recommendations for further information.

Fundamental research vs applied research

Private and public funding often heavily favors applied research to achieve immediate benefits. However, focusing excessively on applied science reduces the chances of making new fundamental breakthroughs that can have a wider, long-term impact.

Under its last two directors, the National Institutes of Health (NIH) has shown signs of moving more toward applied biomedical research through such actions as the establishment of the National Center for Advancing Translational Sciences (NCATS) and the dissolution of the National Center for Research Resources (NCRR).

Academic communities often favor funding more fundamental science research. However, focusing on purely scientific approaches in the social sciences can sometimes mean concentrating on questions that are more abstract (and, hence, more simplified) than the complex real-world issues that the field could address.

Stability in science research careers

A significant number of researchers who do not have established teaching positions are dependent on government grant money. As funding available from NIH and other government grantmakers has stagnated, appreciable numbers of researchers are losing their only source of support, making the existing size of the research community difficult to sustain and jobs harder to find for new post-docs.

Research could provide more stable careers if the population of researchers were more tailored to the size needed for teaching on an ongoing basis. Grants provided for a block of several years, such as those provided by the Howard Hughes Medical Institute (HHMI), rather than on an annual basis, would also make it easier for researchers to plan around funding availability with less risk from year to year.

Impact of policy on the cost of research

Two successive surveys performed 7 years apart by the Federal Demonstration Partnership indicated that researchers are, on average, spending 42% of their federally funded research time on administrative matters. Dr. Bienenstock recently headed the National Science Board's Task Force on Administrative Burden to determine methods by which that burden might be reduced. The Task Force's final report was released in May 2014 and is available on the NSB's website.

The Department of Education is providing \$1 million to the National Academy of Sciences (NAS) to study how administrative burdens on researchers can be reduced. A comprehensive analysis of which legislation, regulations, and policies should be changed to reduce administrative burdens will likely require more resources. Dr. Bienenstock is currently working to raise funds for this effort. One possible vehicle for such an analysis would be the Committee on Science, Technology, and Law (CSTL) at the NAS. In the long run, a dedicated policy research center based in a host university could study this issue, among others, on an ongoing basis.

Funding opportunities

- Some research fails to receive funding because it is too far away from immediate application to get support from industry but too advanced or specific to garner funding as fundamental science. Private donors could help fill this gap.
- With many researchers dependent on institutional grant money, private support of research is still important in many fields.
- Studying how to minimize administrative costs could free up grant money for more research. Dr. Bienenstock is actively trying to raise \$500,000 to study this topic. More long-term investment could build institutions designed to address this problem going forward, as laws and policy change over time.

Others to talk to about these issues

- Neal Lane, Malcolm Gillis University Professor of Physics and Astronomy, Rice University
- David Korn, Professor of Pathology, Emeritus, Stanford University
- Claude Canizares, Bruno Rossi Professor of Physics, Vice President, MIT; Associate Director, Chandra X-ray Observatory Center

- Burton Richter, Paul Piggott Professor in the Physical Sciences, Emeritus, Stanford University; Director Emeritus, Stanford Linear Accelerator Center
- Daniel Goroff, Vice President and Program Director, Alfred P. Sloan Foundation
- Shirley Malcolm, head of Education and Human Resources Programs, American Association for the Advancement of Science (AAAS)
- The Kavli Foundation

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