

## **A conversation with Neal Lane on April 16, 2014**

### **Participants**

- Neal Lane – Senior Fellow in Science and Technology Policy, James A. Baker III Institute for Public Policy and Malcolm Gillis University Professor , Rice University
- Holden Karnofksy – Co-Executive Director, GiveWell

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

### **Summary**

GiveWell spoke with Dr. Lane about issues in the scientific research community and advocacy around possible reforms.

### **American Academy of Arts and Sciences (AAA&S) study on scientific research**

Dr. Lane and Norman Augustine are co-chairing a study for the American Academy of Arts and Sciences (AAA&S) that intends to bring greater attention to the long-term impact of scientific research and to propose major changes for the research infrastructure. In particular, the study focuses on federally funded research, especially basic research, because of the recent decrease in federal research funding.

The following issues are of concern to Dr. Lane:

#### *No unified national science policy*

The U.S. government has not had an explicit science policy since the Cold War. After the Cold War ended, the implicit science policy was to focus on biomedical research to improve American health. However, there was no structured discussion of scientific research priorities among universities, the private sector, and the government. Recently, even biomedical research has had declining support.

#### *Challenge to funding basic research, especially high-risk ideas*

The National Science Foundation (NSF), the National Institutes of Health (NIH), as well as the Department of Energy's Office of Science, NASA and other agencies support basic research. But, increasingly, these agencies have been challenged to ensure that the research they support has potential practical benefits for the country. As a result, support for bold, sometimes called "high risk," research has suffered. There has been a growing pressure to identify outcomes, and that discourages potentially path-breaking investigations.

The Defense Advanced Research Projects Agency (DARPA) and the Defense Threat Reduction Agency (DTRA) have funded some high-risk, high-reward research and basic research. However, these agencies have very specific missions, and those missions set the

priorities for the research they support. Understandably, they emphasize applied research and technology.

Many philanthropic organizations and private donors support research, but, understandably in targeted areas, e.g. astronomy and medicine. The federal government is the only reliable supporter of basic research in all fields. Federal agencies use expert peer review to evaluate unsolicited proposals and base their funding decisions on those reviews.

Because of the conservative nature of peer review as well as the increased emphasis on outcomes, researchers are usually cautious about suggesting risky or unusual ideas in their grant proposals.

#### *Decreasing federal funds for research*

Federal funding has decreased over the past decade, in real terms, for most types of research, but biomedical research in particular has been affected by sharp ups and downs of NIH budgets. Between 1998 and 2003, the NIH budget for biomedical research doubled, so universities scaled up infrastructure for research and large numbers of young people were attracted to the field. Since 2003, the federal biomedical research budget has been declining, in real terms, almost continuously (except for the one-time stimulus funding contained in the American Recovery and Reinvestment Act of 2009). Among other effects, this has meant that large numbers of graduates in biomedical fields have been unable to find tenure-track positions. The present political climate suggests that the biomedical research budget is not likely to recover soon, so universities and young researchers will need to develop strategies to cope with lower levels of funding.

#### *Issues in the social sciences*

Research funding challenges are not limited to the natural sciences – some politicians are also critical of funding for the social sciences. Current criticism of NSF's priorities and peer review process by some Congressional leaders may have the effect of reducing support for the social sciences. Dr. Lane is not aware of any basis for the argument that the social sciences are less important than other fields.

#### **Creation of a new organization to address issues in scientific research**

Dr. Lane expressed the view that future U.S. leadership in science and technology – particularly science, engineering and medical research – is in question because the nation lacks a vision and commitment, and there is no mechanism to change that. The federal policy making apparatus is out of sync with changes occurring across the globe. But substantive change is likely to come from outside the federal government.

The U.S. is fortunate to have a number of highly respected non-government organizations (NGOs) that carry out studies on policy issues that are important to American science, engineering and medical research. But none of these has the task of keeping all the relevant information and recommendations current. It would be useful to have a mechanism – a

new non-government organization or, perhaps, an alliance of existing organizations – to assess the state of U.S. science and technology, the nation’s research infrastructure and support base and address policy reforms that need attention.

Potential projects for this type of organization:

- *Provide the general public and policy makers with current information – data and analysis – relevant to science policy;*  
The intention is not to try to duplicate or replace the policy-related work of other organizations but to add value by pulling together all this information and, working with other entities, keep it current. The goal is to be sure good policy ideas don’t get lost and, where appropriate, are updated.
- *Carry out independent non-partisan analysis and develop policy options across a political spectrum – from more progressive to more conservative;*  
Study topics would be selected by a distinguished advisory board, with members who are recognized leaders with experience in research, academic administration, business and industry, and public policy. The studies could be done in-house or contracted out.
- *Work with other organizations to amplify the message about the importance of science, engineering and technology, especially research, to the American people; Many individuals and organizations engage in outreach to the general public, K-12 schools, and policy makers. These efforts can be enhanced by identifying a common message and strategy in getting it heard.*

Reasons that this work is not currently being done may include:

- Congress does not have mechanisms to effectively discuss these issues, in part because of divided committee jurisdictions.
- Presidents do have access to the Office of Science and Technology Policy (OSTP), which focuses on national S&T policy; but the priorities and people change with administrations, losing continuity.
- There are many professional societies and other NGOs that address policy matters. But they focus on the issues that are most relevant to their disciplines.
- That National Academies’ National Research Council (NRC) is well known and respected for its objective studies and peer-reviewed reports. But it does not have the task of doing the things described above.

Dr. Lane has considered the idea of a dedicated organization to do this work but has concluded that it is very difficult to raise funds for a new organization, and doing so could be perceived as competing with other organizations, , when in fact success will require close cooperation with many of them. An alliance of existing NGOs would also require operating funds, but should encourage cooperation. The internet and modern networking tools could provide efficiencies and reduce the need for large up-front investments.

## **Creation of a standing committee on scientific research issues at AAA&S**

Dr. Lane discussed the possibility of a new standing committee at the AAA&S focused on science, engineering and technology. It could be the touchpoint for the Academy's involvement in a larger alliance, if that comes to be.

Dr. Lane noted that the AAA&S, which is carrying out the present study on the future of American research, has ongoing activities in several areas related to science and technology, including several studies focused on advancing research in the U.S., and is expected to engage in a number of follow-on activities related to the study he is co-chairing with Norman Augustine. One possibility could be a standing committee focused on the nation's science, engineering and technology enterprise, perhaps with a special focus on research. Current standing committees publish papers, organize global workshops, fundraise, and publish special issues of *Daedalus* (the journal of AAA&S).

The American Academy is uniquely suited to this type of project because of the breadth and reach of its membership. Founded by John Adams in 1780, its elected membership includes scholars and other professionals from diverse fields, including science and engineering, business, law, medicine, government, and the arts and humanities. The activities of the Academy, including its studies and standing committees, reflect the diversity of perspectives of its members. The active involvement of leaders outside the scientific community can add credibility to proposed science policy reforms.

AAA&S receives funding mainly from the MacArthur Foundation and the Sloan Foundation.

*GiveWell's view on the importance of creating a new organization dedicated to scientific research issues:*

*A new organization not only could provide a consistent voice for research issues, including needed policy reforms, but also could increase the funding available for amplifying this voice. The scientific community appears to have far less capacity for advocacy than many other fields. It may be effective to have an analogous organization focused on scientific research.*

Dr. Lane largely agrees with the above statement. He believes that more time should be devoted to reforming scientific research. If a standing committee is created at AAA&S, he believes that it could take a more active role beyond publishing reports for example.

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