11.15 - 12.30

Roundtable: Science during and after Crisis Times

Toby Smith – American Association of Universities
Marta Wróblewska – National Centre for Research and Development Poland

AESIS

Impact of Science

4-6 November, Krakow

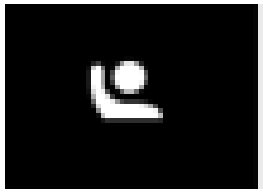
Roundtable: Science during and after Crisis Times

Kościół Mariacki room

AESIS

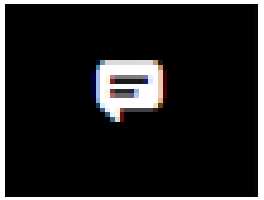
Impact of Science

4-6 November, Krakow



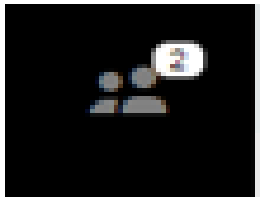
Broadcast permission:

- Turn on your microphone and/or camera
- Participate in the discussion



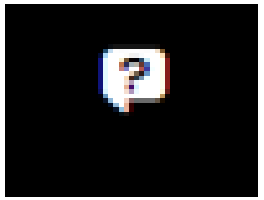
Conversations:

- General remarks
- Discussion
- News (links)



Who are the attendees?

- Speakers
- Participants



Q&A:

- (Targeted) questions
- Speakers answer the questions live

Lay out view:
Full screen, Tiled, Thumbnail

AESIS

#IoS20

Science During & After Times of Crisis

A Current & Historical Perspective from the United States

Tobin L. Smith @SciPolGuy
Association of American Universities
AESIS Impact of Science Conference
November 6, 2020

Historical Perspective: What Drives Major Change in National Policy for Science?

- Crisis

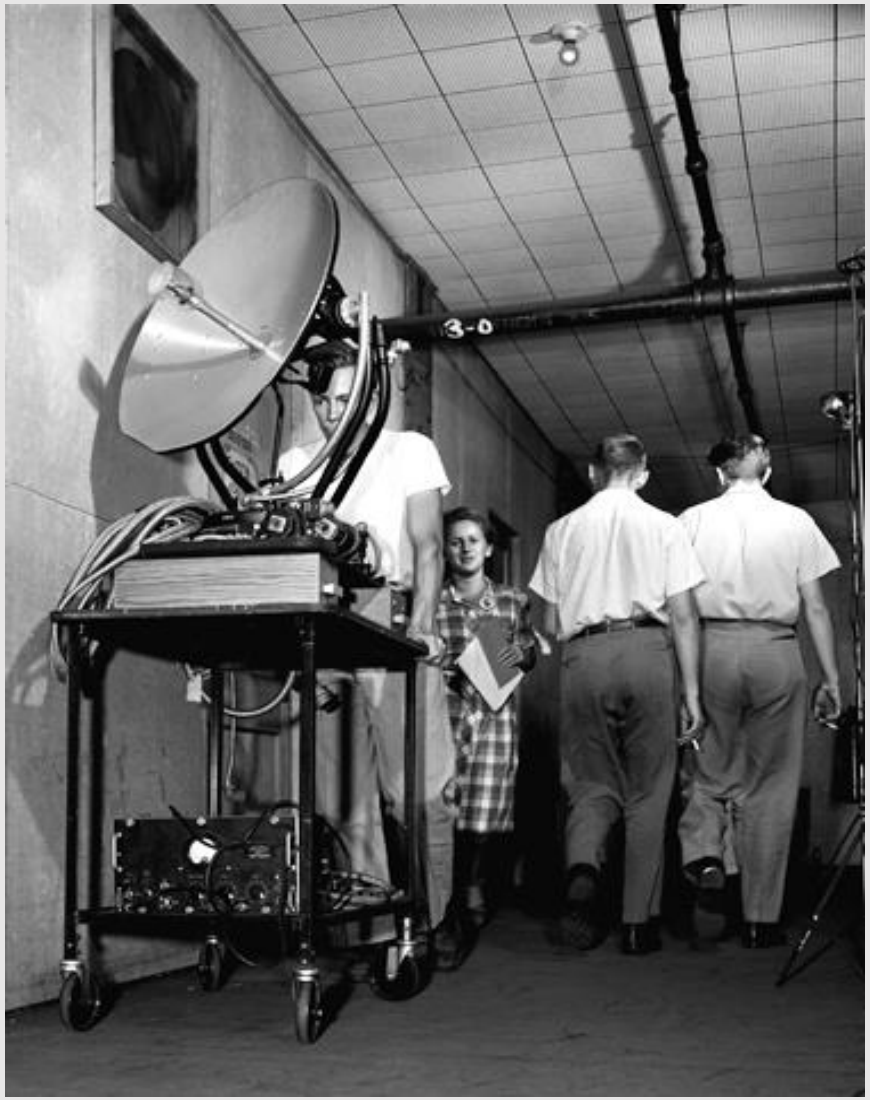
  -- e.g. *World War II*

- Perceived Crisis

  -- e.g. *Sputnik*

- Leadership

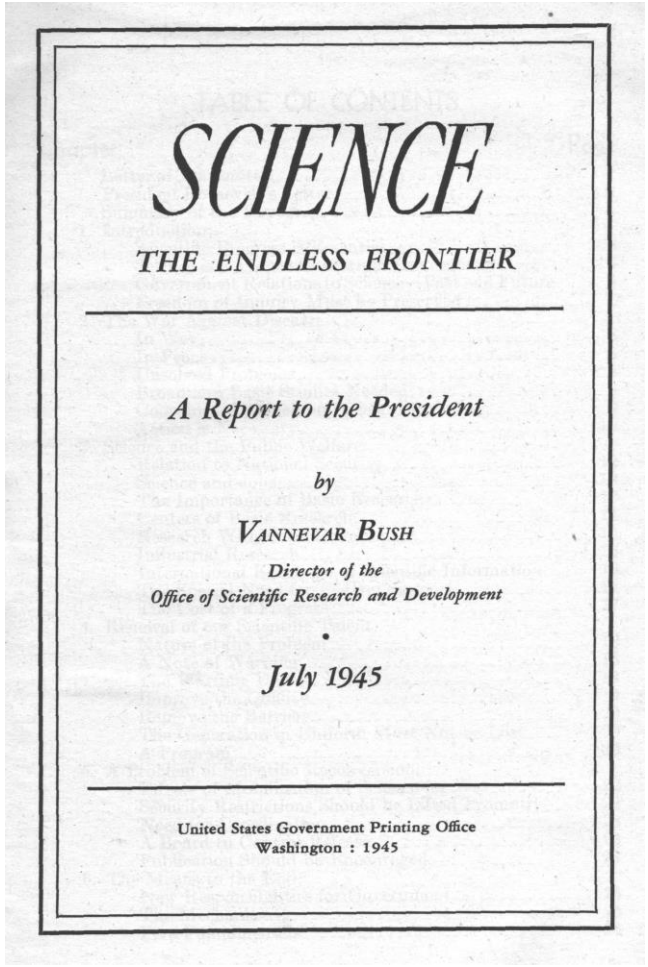
  -- e.g. *FDR, Eisenhower*



Air and surface radars developed by the MIT Rad Lab were pivotal to improved navigation and defense during World War II.

Association of American Universities

Current U.S. Science Policy Grew out of World War II



SCIENCE

THE ENDLESS FRONTIER

A Report to the President

by

VANNEVAR BUSH

Director of the
Office of Scientific Research and Development

July 1945

United States Government Printing Office
Washington : 1945

"Science can be effective in the national welfare only as a member of a team, whether the conditions be peace or war. But without scientific progress no amount of achievement in other directions can insure our health, prosperity, and security as a nation in the modern world."

Science - The Endless Frontier, July 1945

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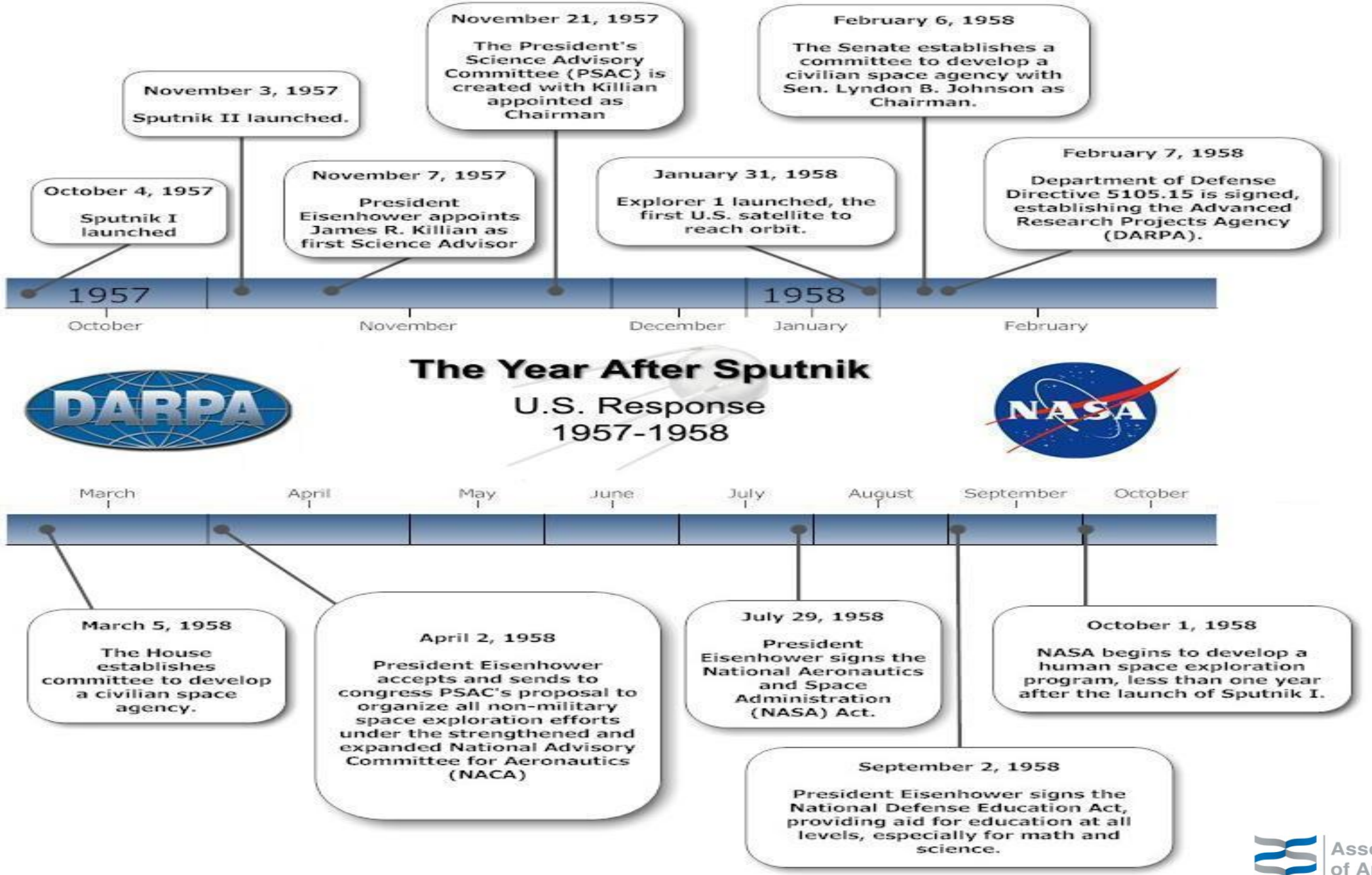

-- Prepared by Brad Nolen, Association of American Universities, September 18, 2007

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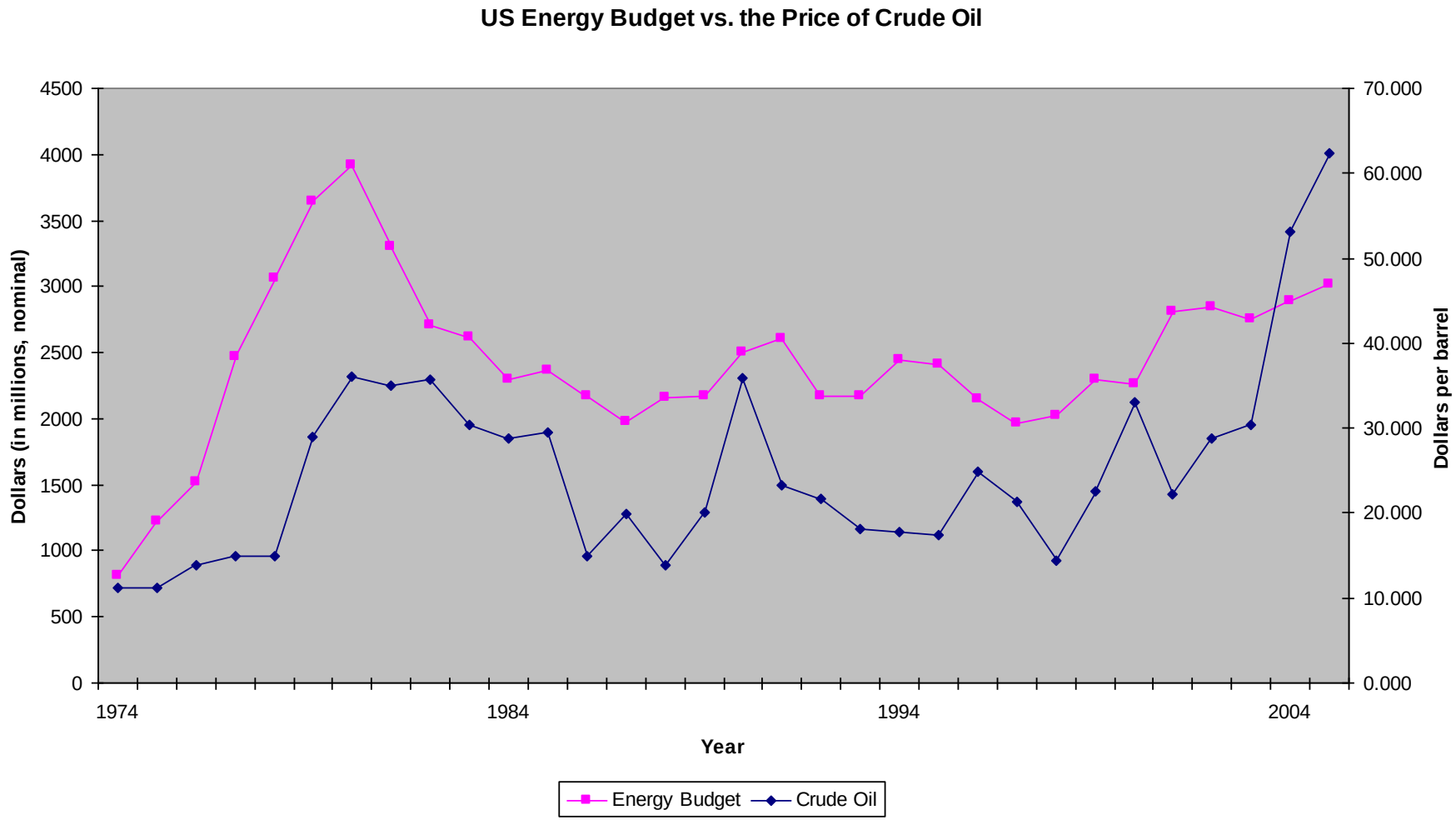
U.S. Energy R&D Spending vs. Price of Crude Oil



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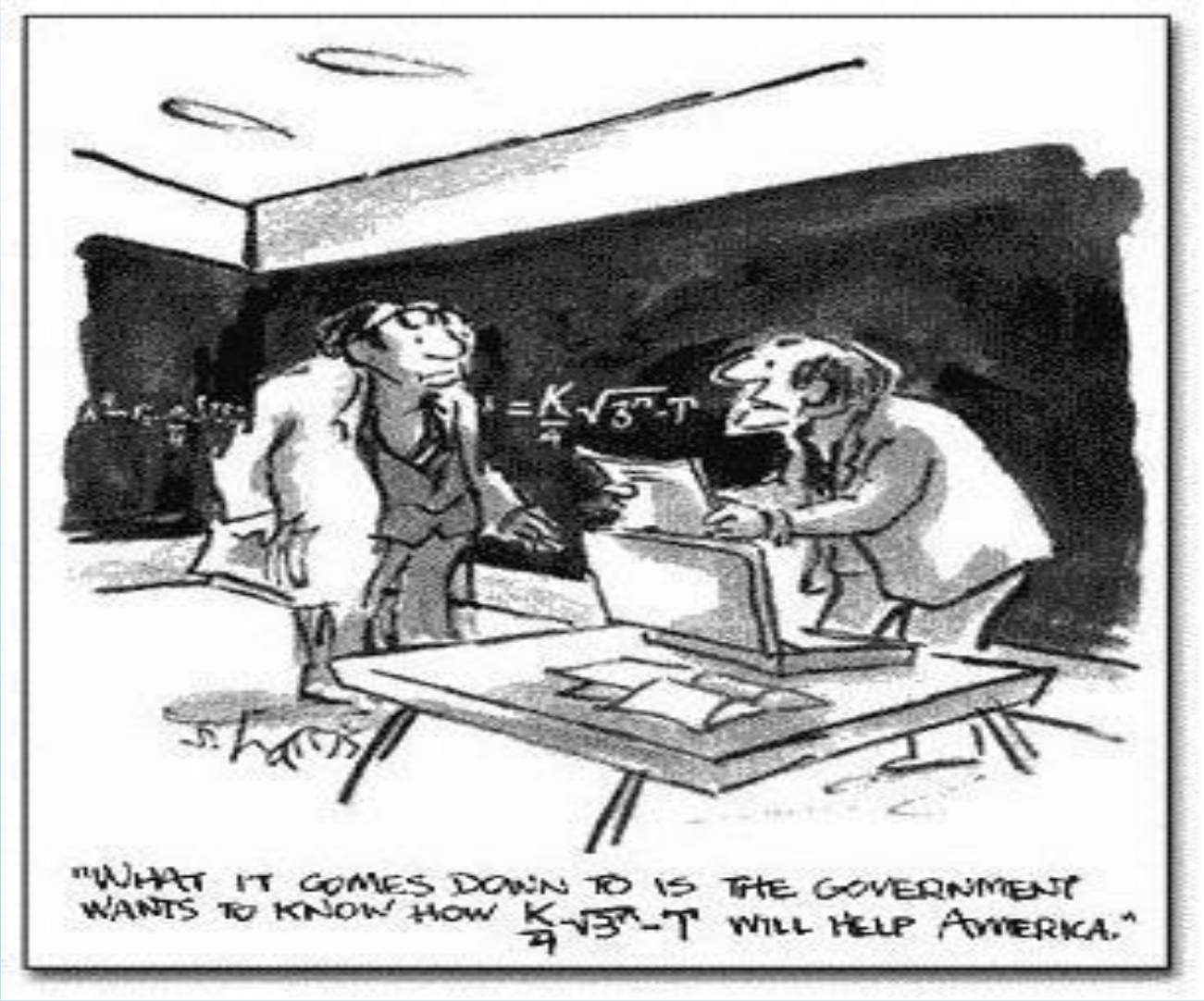
What Government & the Public Want from Science During Crisis Times

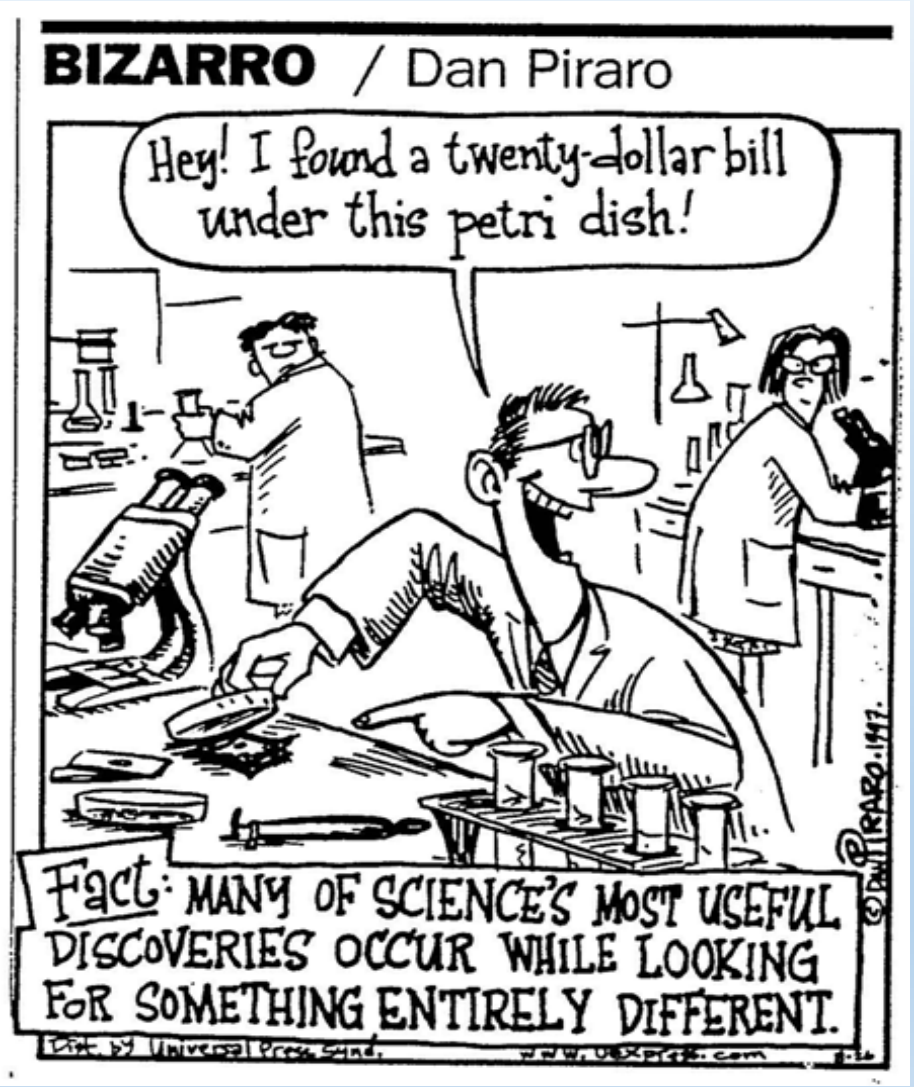


By Cartoonist Sidney Harris in the American Scientist

Association of American Universities

Why Science Has a Hard Time Delivering

- Cannot easily predict scientific outcomes
- Impact is difficult to assess in the short-term
- Science is constantly evolving and not stagnant, especially in times of crisis
- Scientists and the public view impact differently



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Science During Crisis

2019 American Academy of Arts & Sciences Report

EDITORIAL

Science during crisis

In April 1902, on the Caribbean island of Martinique, *La Commission sur le Vulcan* convened to make a fateful decision. Mt. Pelée was sending smoke aloft and spreading ash across the capital city of Saint-Pierre. Comprising physicians, pharmacists, and science teachers, the commission debated the danger of an eruption and the burden of evacuation, and judged the safety of the city's population to be "absolutely assured." Weeks later, Mt. Pelée erupted and approximately 30,000 residents died within minutes, leaving only two survivors. Environmental crises require pivotal decisions, and such decisions need timely, credible scientific information and science-based advice. This requirement is the focus of a report released last month by the American Academy of Arts and Sciences*, calling attention to improvements in the operation and delivery of science during crises.

"...science will play a critical role...guiding decisions governing disaster response and recovery."

Science has provided essential data and insight during disaster responses in the United States, including the World Trade Center attack (2001), Deepwater Horizon oil spill (2010), Hurricane Sandy (2012), and the Zika virus epidemic (2016). The context of scientific work done during such major disasters differs from that of routine science in several ways. Conditions change rapidly—wildfires spread swiftly, hurricanes intensify within hours, and aftershocks render buildings unsafe. In such scenarios, scientists must respond within tightly constrained time frames to collect data, do analyses, and provide findings that normally would involve months or years of work. Decision-makers need actionable information (such as risk assessments or mitigation techniques), yet scientific information is only one of many inputs to disaster response. Because communication networks may be severely disrupted, as occurred in Puerto Rico during Hurricane Maria (2017), delivery of science becomes even more difficult.

Thus, science during crisis involves specialized actions such as heightened attention to coupled human-natural systems and cascading consequences. Important responses include rapid establishment of interdisciplinary scientific teams, local knowledge quickly integrated into scientific work, clear and compelling visualization of results, and concise communication to decision-makers, disaster-response specialists, and the public.

The Academy report, based on the findings of a workshop that involved a range of experts, provides specific recommendations for best practices in the United States. Because analyses must be done immediately and often under hazardous conditions, quickly accessible funding (such as the RAPID program of the U.S. National Science Foundation) at the federal, state, and local levels could ensure that ephemeral data will be collected and findings delivered to decision-makers as needed. During a crisis, a central, curated clearinghouse for data and scientific information can improve scientific collaboration, speed up analyses, and build public trust. Because first responders and scientists often bring very different perspectives, vocabularies, and needs to a disaster event, expanded joint training would allow these communities to work more effectively together.

The report recommends several policy reforms. State governments should appoint chief scientific officers to coordinate state-sponsored scientific activity and liaison with federal scientists and emergency response agencies. Modest modification of the Federal Advisory Committee Act would allow teams of federal and nonfederal scientists to collaborate more effectively during a crisis, while maintaining transparency and accountability.

In 2018, the United States experienced 14 weather and climate disasters with losses exceeding $1 billion each and a total of 247 lives lost. The summer wildfire season in the American West will soon again begin, followed by the start of the 2019 hurricane season in the Atlantic Ocean. There will be new disasters and science will play a critical role, informing and guiding decisions governing disaster response and recovery. Science during a crisis must be as effective as possible. The academy report is a call to action.

–**Rita R. Colwell and Gary E. Machlis**

Rita R. Colwell *is a Distinguished University Professor at the Center for Bioinformatics and Computational Biology, University of Maryland Institute of Advanced Computer Studies, University of Maryland, College Park, Maryland, USA. rcolwell@umiacs.umd.edu*

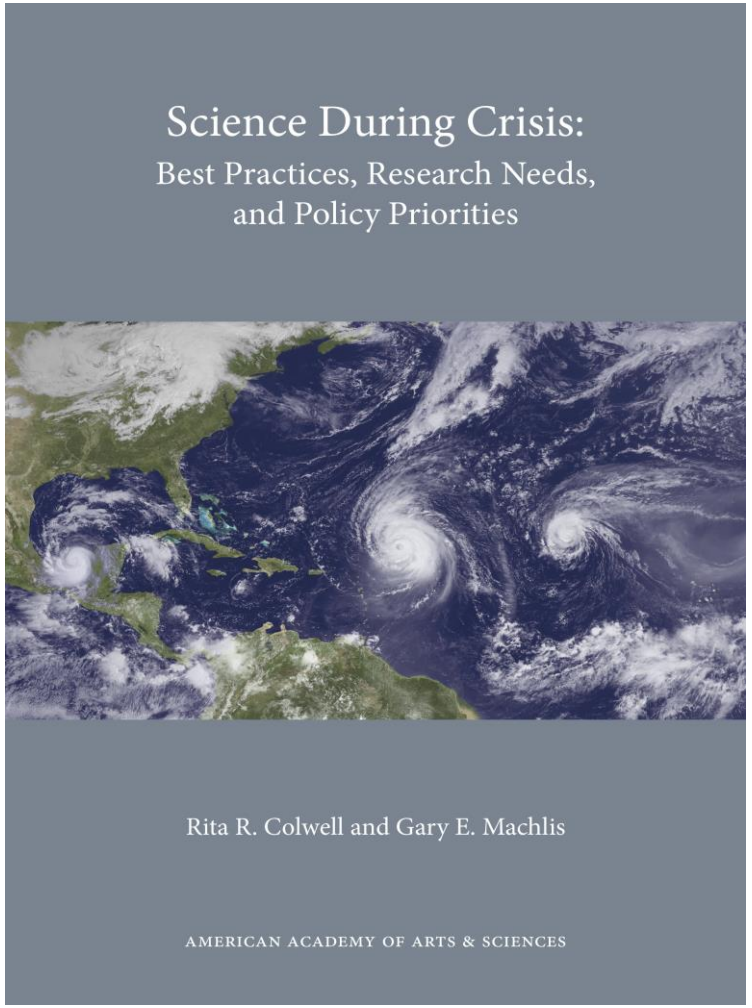
Gary E. Machlis *is a University Professor of Environmental Sustainability at Clemson University, Clemson, South Carolina, USA. machlis@clemson.edu*

PHOTO: TALLANDIER/BRIDGEMAN IMAGES

*R.R.C. and G.E.M. chaired the committee of the American Academy of Arts and Sciences that released the report "Science During Crisis: Best Practices, Research Needs, and Policy Priorities" (2019).

10.1126/science.aax5052

Published by AAAS



Rita Colwell & Gary Machlis, *Science*, 05 April 2019

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Science During Crisis

2019 American Academy of Arts & Sciences Report

Recommendations for a Research Agenda During a Crisis

- Establishing baseline information
- Understanding cascading consequences to document and predict the complexity of the crisis, and to improve response and rebuilding strategies
- Addressing divergent scientific opinions, data, and results during crisis
- Communicating science during crisis
- Assessing how science-based decisions are made
- Using big data to support science during crisis

Recommendations for Improving Best Practices for Science During a Crisis

- Federal, state, and local agencies should have available emergency funds for science during crisis
- The emergency-response and scientific communities should expand joint training and outreach/education
- At the onset of a crisis, a central curated clearinghouse developed in advance should be activated to collect, disseminate, and coordinate relevant scientific information

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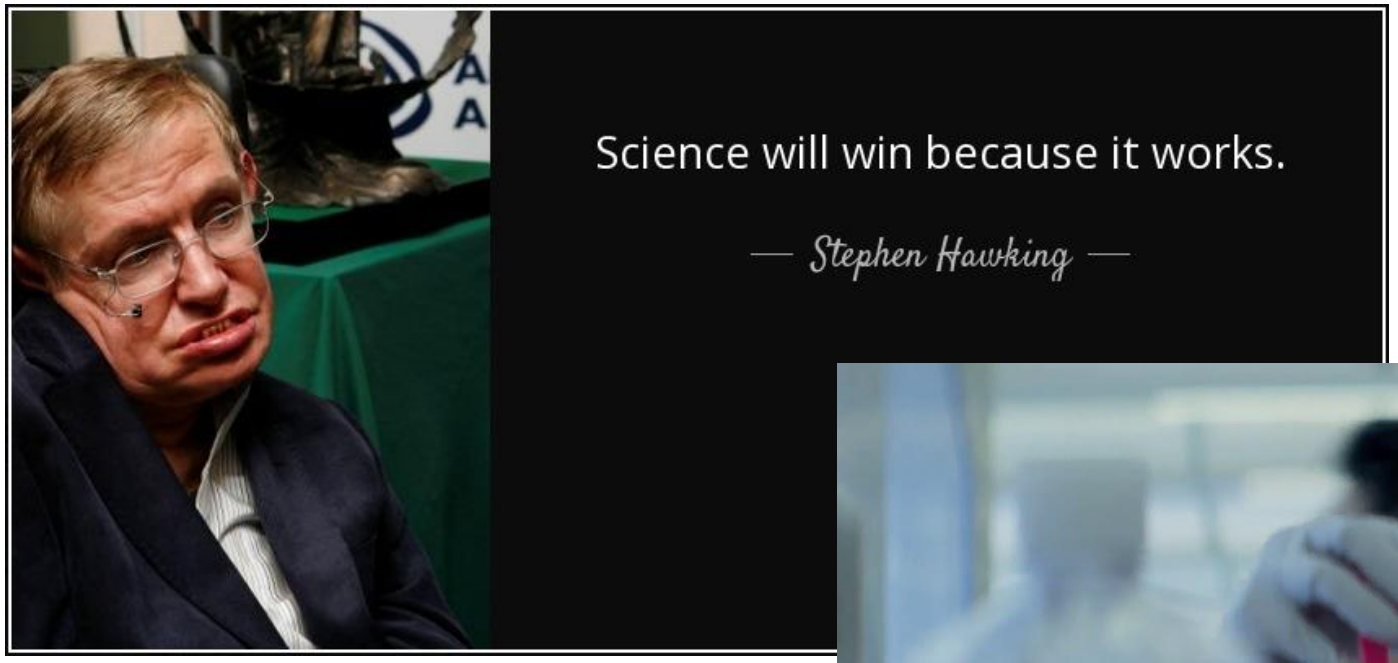

Science

Will Win...
But only if...

https://www.youtube.com/watch?v=XI0tEfLve1U

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In a polarized world, what does ‘follow the science’ mean?

Science is all about asking questions, but when scientific debates become polarized it can be difficult for average citizens to interpret the merits of various arguments.

The Christian Science Monitor

August 12, 2020

...people understand & trust science.

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“Never let a good crisis
go to waste”

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Association of American Universities

The National Centre for Research and Development

SCIENCE DURING AND AFTER CRISIS TIMES

Current perspective from Poland

Marta Wróblewska

European Funds Smart Growth
Republic of Poland
The National Centre for Research and Development
European Union
European Structural and Investment Funds

OUTLINE OF THE TALK

- National Centre for Research and Development (NCBR): what do we do?
- How did we respond to the pandemic?
- What are the challenges for the scientific community in times of crisis?

The National Centre for Research and Development

- ✓ **Governmental executive agency**
- ✓ brings together **the worlds of science and business** through co-finacing of R&D projects
- ✓ offers financial support of **innovative ideas** of Polish entrepreneurs and scientists
- ✓ distrubutes funding through **innovative formats**: Great challenges, Venture capital, Seed funding

The National Centre for Research and Development

THE NATIONAL CENTRE FOR RESEARCH & DEVELOPMENT

the largest R&D funding and co-funding Agency in Central Europe

- In years 2008-2019 we distributed **59 BLN PLN (~13 BLN EUR)** to Polish enterprises, universities and research institutes to support R&D works, encouraging both experienced and start-up entrepreneurs and scientists to start work on innovations
- In 2020 our budget was **6,5 bln PLN** (1,4 bln EUR) for **50 calls for proposals**
- Aim: facilitating Poland's social and economic growth and seeking solutions to specific civilisational issues

The National Centre for Research and Development

The National Centre
for Research and Development

OUR RESPONSE TO THE PANDEMIC

OUR RESPONSE TO THE PANDEMIC

- Shift to online operation of council, flexibility in supporting existing beneficiaries and prospective applicants
- 300 mln PLN (66 mln Euro) funding for 2 initiatives related to the pandemic:
  - Funding scheme for infectious diseases hospitals
  - „Koronawirusy” Fast track funding scheme

The National Centre for Research and Development

FLEXIBLE RESEARCH COUNCIL IN TIMES OF PANDEMIC

- Postponement of deadlines at risk because of the pandemic. Starting mid-March evaluation panels, workshops moved online
- More flexibility and support for research projects already under way (e.g. 3 month extension for research projects)
- Home office for employees, online accessibility
- A push for development of gov tech

The National Centre for Research and Development

FUNDING SCHEME FOR INFECTIOUS DISEASES HOSPITALS

- Methods of preventing and treating SARS-Cov2/Covid 19
- Level of funding up to 100%
- Announced 22.04, applications 22.04-31.05, start of project by 21.07
- 14 funded projects related to:

  -diagnosis – 4

  -prevention - 3

  -treatment – 4 (incl. 1 vacine)

  -procedures/ planning / management - 4
- Funded on projects: link

The National Centre for Research and Development

„KORONAWIRUSY” FAST TRACK FUNDING SCHEME

- Concept: support solutions aimed at addressing this pandemic but also spread of pandemics in future
- Not just medicine or pharma but also solutions to social problems (based on AI, robotics)
- Fast track, 3 rounds of applications
- 200 mln PLN (44 mln euro) from EU Funds
- Announced 06.04, Open for applications from 06.05, Deadline 05.06, Results 09.09

The National Centre for Research and Development

- 8 funded projects related to:
  - Diagnosis 3
  - Treatment 1
  - Detection 1
  - Prevention of pandemic spread 1
  - Modeling and predicting 1
  - Robots assisting medical staff 1
- More on funded projects: link

The National Centre
for Research and Development

CHALLENGES FOR SCIENCE IN TIMES OF CRISIS

LACK OF TRUST IN SCIENCE AND POOR UNDERSTANDING OF SCIENTIFIC PROCES AMONG POPULATION

- 32% of world population believe their lives would be the same if science didn't exist (3M report)
- Levels of willingness to accept COVID-19 vaccine are insufficient to achieve community immunity and…
- respondents from Poland reported the highest proportion of negative responses (27.3%)! (link)

The National Centre for Research and Development

QUESTION FOR THE ROUNDTABLE PARTICIPANTS

As the scientific community how can we tackle issues of

science scepticism

conspiracy theory

fake news

in order fully benefit of the knowledge and technologies we have developed?

The National Centre for Research and Development

ISSUES FOR DISCUSSION AND DEBATE – CONTINUED 1

- What challenges emerge for science when a crisis arises? What opportunities?
- What policy changes might be made to better help science to respond to crisis? How do you evaluate the success of science in times of crisis?
- Should scientists engage in politics?

The National Centre for Research and Development

ISSUES FOR DISCUSSION AND DEBATE – CONTINUED 2

- How can SSH and hard science complement eachother?
- What could the role of science communicators (journalists, reporters, bloggers, comedians) be in communicating scientific results to the broader public?
- What policy changes might be made to better help science to respond to crisis? How do you evaluate the success of science in times of crisis?

The National Centre
for Research and Development

THANK YOU FOR YOUR ATTENTION

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Up Next

12.30-13.00	Break
13.00-15.00	Closing Panel: "Recommendations for the Polish science system, and beyond"