

Broader Impacts and the Accountability of Science

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ESF Member Organization Forum
on Peer Review
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Peer Review: Past, Present, Future

-Origins: Socrates; Royal Society (17th C); for grants, NIH 1937

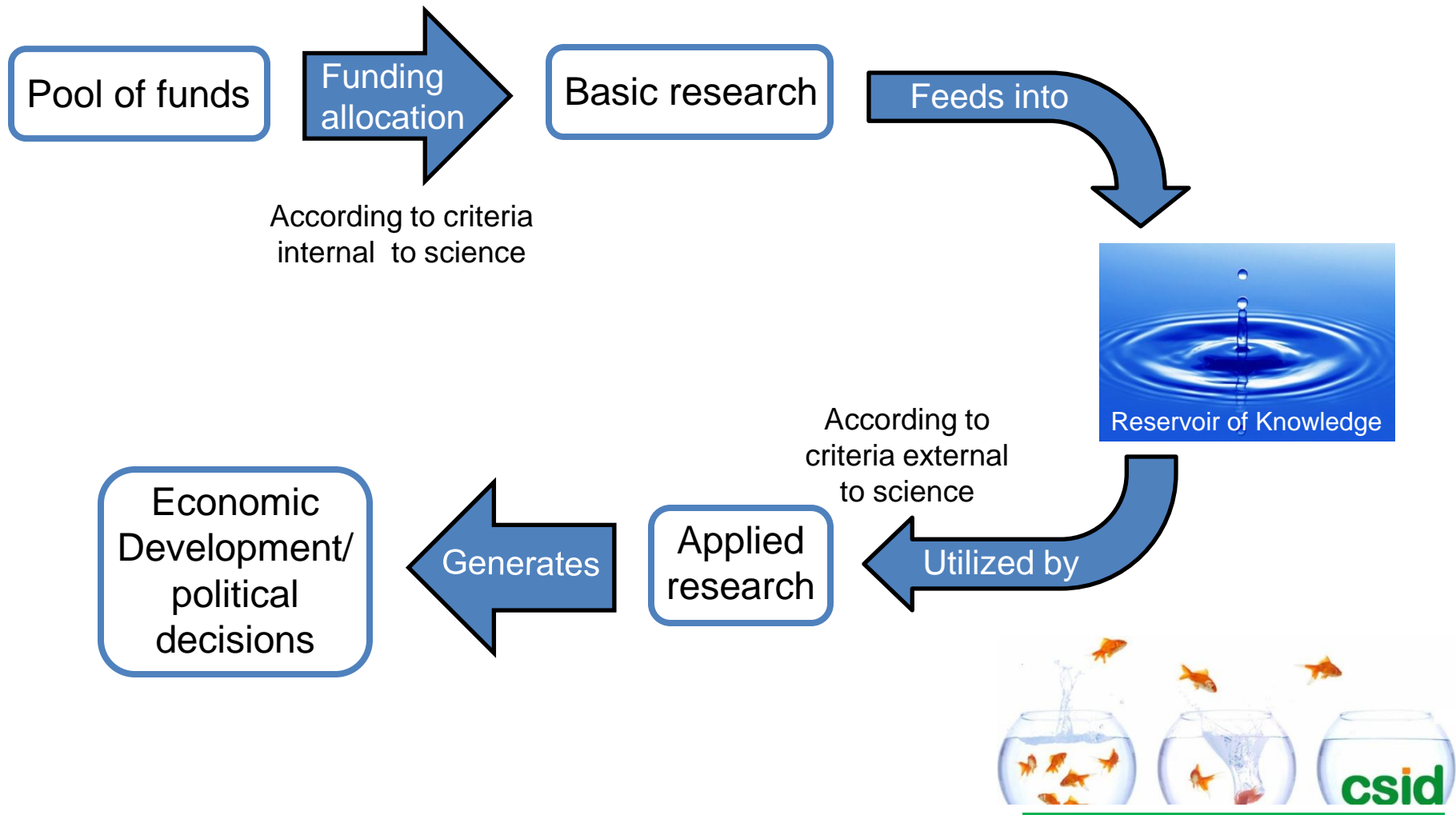
-Vannevar Bush: *Science, the Endless Frontier* (1945)

1945-1990:

- Linear hypothesis dominant: internal quality/external accountability
- Who guards the guardians? Polanyi's 'Republic of Science' (1962)
- Chubin and Hackett (1990): scientists "implacable in sequestering this process from public view"



The 'linear' model of disciplinary knowledge production (DKP)



Peer Review: Past, Present, Future

Today: vestiges of the past, but a new era

- More than just vestiges... cf. Collins, 2011
- Web 2.0 and the democratization of knowledge: everyone is a peer
- Neoliberal trends = pressure on public sector; the rise of an 'audit culture'
- Peer review criticized as subjective & slow; challenged by the rise of metrics



The future of peer review? --Nov '10

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ERIC CANTOR

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Congressman Adrian Smith Launches The First YouCut Citizen Review

by EricCantor

First, we will take a look at the National Science Foundation (NSF) – Congress created the NSF in 1950 to promote the progress of science. For this purpose, NSF makes more than 10,000 new grant awards annually, many of these grants fund worthy research in the hard sciences. Recently, however NSF has funded some more questionable projects – \$750,000 to develop computer models to analyze the on-field contributions of soccer players and \$1.2 million to model the sound of objects breaking for use by the video game industry. Help us identify grants that are wasteful or that you don't think are a good use of taxpayer dollars.

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Stop rewarding States for recruiting additional Food Stamp recipients

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YouCut Legislative Record for the 112th Congress.



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[YOU CUT CITIZEN REVIEW](#)

Review National Science Foundation Grants and Spending.

+ FLOORUPDATES

On Friday, the House will meet at 9:00 a.m. for legislative business. First votes and last votes

CAPR – the Comparative Assessment of Peer Review

-Funded by NSF's SciSIP program (2008-2011), examines peer review of grant proposals at 6 science agencies

- National Science Foundation
- National Oceanographic and Atmospheric Administration
- National Institutes of Health
- Natural Sciences and Engineering Research Council of Canada
- Dutch Technology Foundation (STW)
- European Commission Framework Programmes



The Elements of CAPR

- Digital Repository: collection of PR documents from/relating to each agency
- Survey of stakeholders concerning the PR process
- Workshops in the US and EU on the changing nature of PR
- Publications (e.g., *Research Evaluation*, *Minerva*; *Peer Review* coming out in China this spring)
- Next steps: evaluation of ex post assessments and an analytic of metrics (bibliometrics, societal impact metrics, sustainability metrics, etc.)



The Rise of Metrics



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STAR METRICS - Science and Technology for America's Reinvestment: Measuring the Effect of Research on Innovation, Competitiveness and Science, is a multi-agency venture led by the National Institutes of Health, the National Science Foundation (NSF) and the White House Office of Science and Technology Policy (OSTP).

The STAR METRICS project is a partnership between science agencies and research institutions to document the outcomes of science investments to the public. The benefits of STAR METRICS are that a

But Also:

-Payback framework

-Productive Interactions

-ISS at LSE

-Societal Quality Indicator

-Sci Quest

-Altmetrics



CAPR Conclusions

- Effects of placing broader impacts (BI) considerations at different places in the entire review process, in terms of accountability, autonomy, efficiency, etc
- Resistance to judge BI; but not tied to inability to judge
- Increasing ties between BI and transformative or 'breakthrough' research
- Our take: BI most effective when the overall goal is identified, but researchers are left wide latitude on how to get there (cf. NSF's new criteria)



Further Thoughts

- silence of ESF's PRG on 'broader impacts,' when we see social dynamics toward inter- and transdisciplining peer review
- Generally, when 'impact' does come up, focus is on *making the connection*, rather than including accounts of anticipated winners/losers (cf. ESF PRG on 'breakthrough research': "risks for failure")
- The dialectic of autonomy and accountability is culturally specific; US, EU, and Chinese examples
- In move toward metrics, tendency to 'black box' metrics criteria, obscuring values concerns

