Whose Priority?

Reflections on Priority Setting in the Sciences

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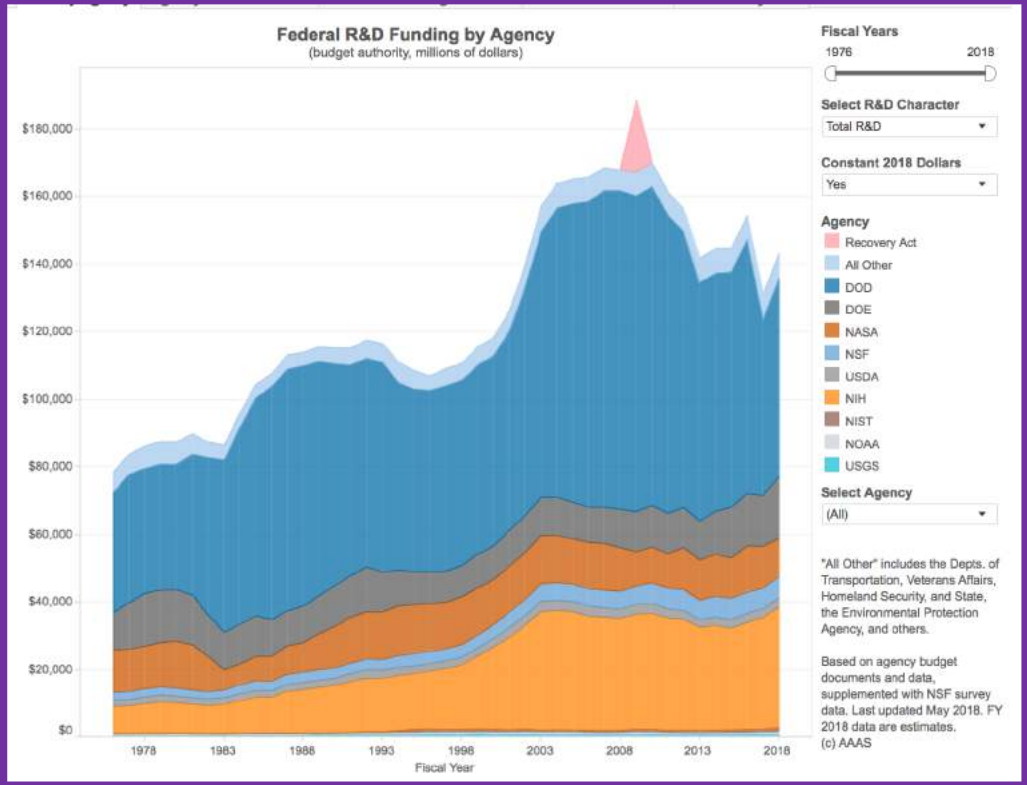
How research priorities are set?

whose priorities?

1. Institutions associated with war, economic competition, or the battle against disease fund most research.

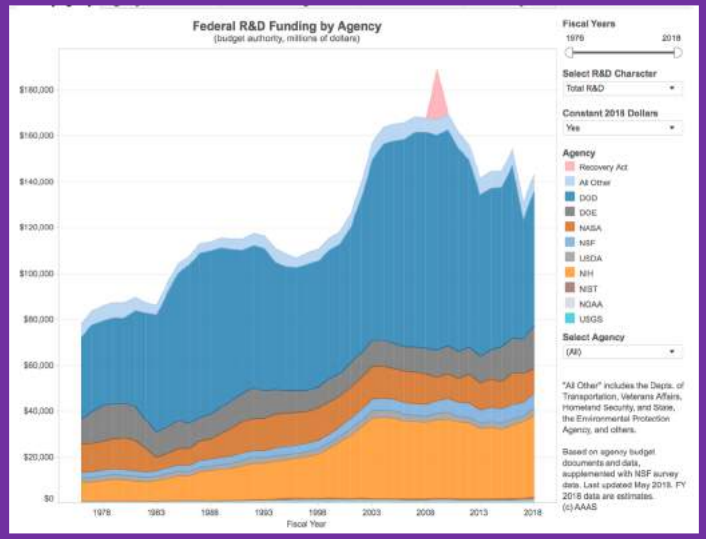


2. Priorities are set in many arenas that allocate different *kinds* and *levels* of resources.

- International agencies
- National governments
- Companies
- NGOs
- Universities
- Laboratories
- Individual choices

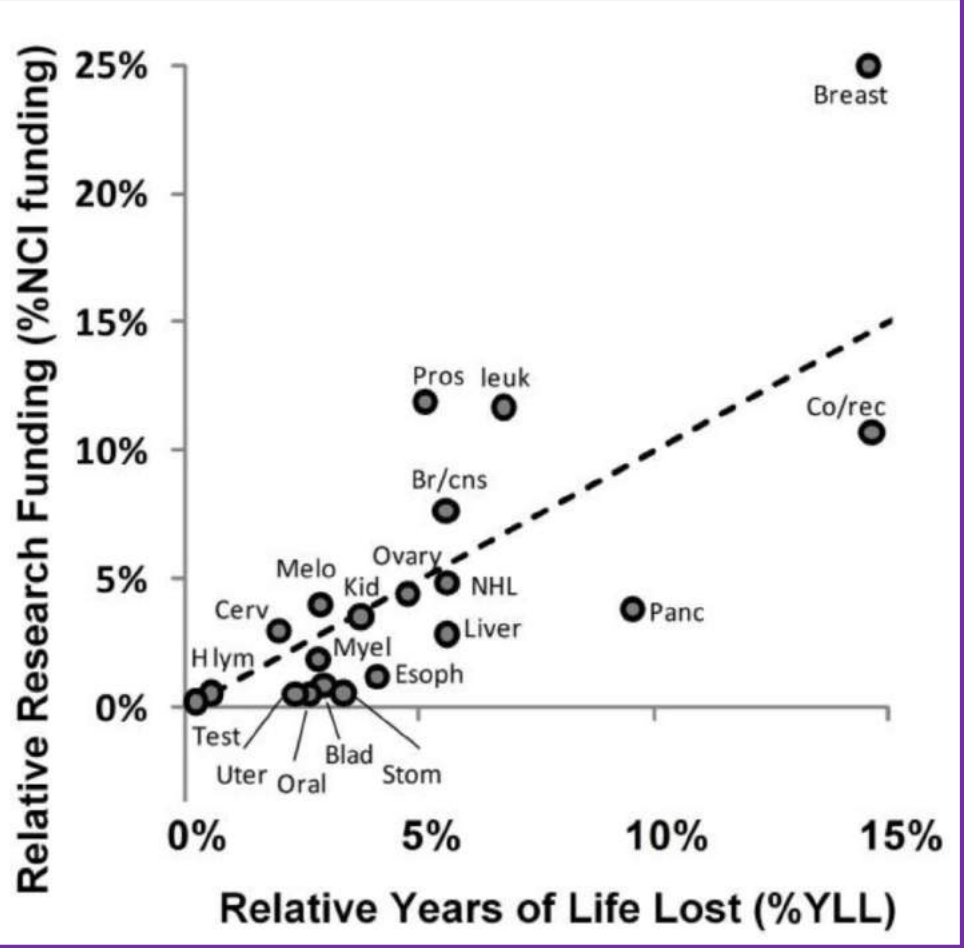
These often apply different definitions of importance.

3. Changes in priorities are typically adjustments at the margins of ongoing practice.



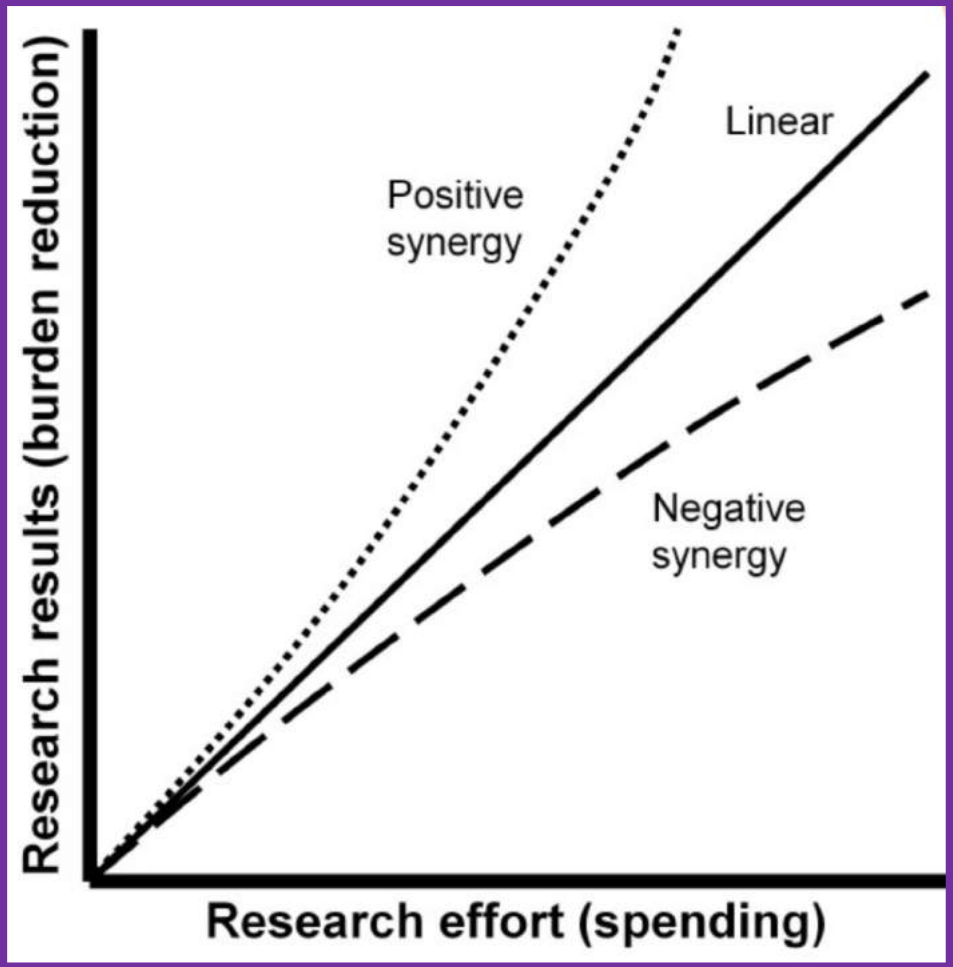
4. The *importance* of a research problem is an essentially contested concept.

- Everyone agrees that research should address "important" problems.
- There are many possible definitions of importance.
- People often disagree about which research problems are important and why.



"We recommend redistribution from overfunded cancers to underfunded cancers to improve the effectiveness of cancer research funding."

Carter and Nguyen (2012)



Carter and Nguyen (2012)

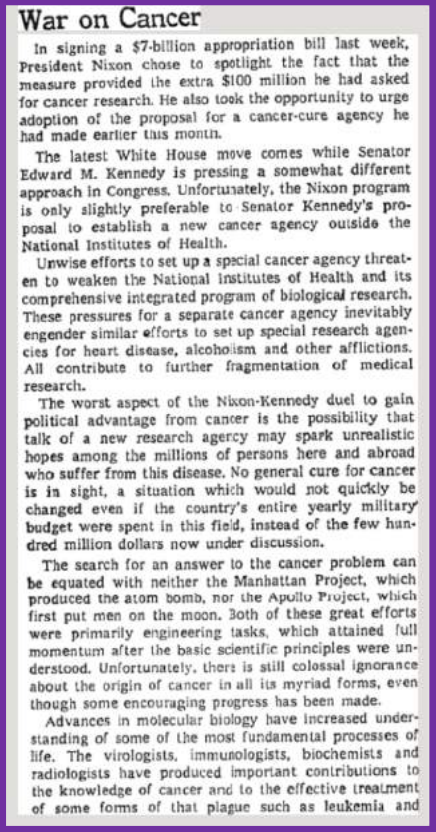
5. Research that fits with prevailing "sociotechnical imaginaries" is more likely to be considered important.

Sociotechnical imaginaries = collectively shared, institutionalized, and publicly performed ways of imagining desirable futures of society and technology.

Jasanoff and Kim (2012)

“War on Cancer”

- Nixon declares war on cancer 1971
- Analogy to Manhattan Project, Apollo program
- Imaginary of defeating disease through a crash program



War on Cancer

In signing a $7-billion appropriation bill last week, President Nixon chose to spotlight the fact that the measure provided the extra $100 million he had asked for cancer research. He also took the opportunity to urge adoption of the proposal for a cancer-cure agency he had made earlier this month.

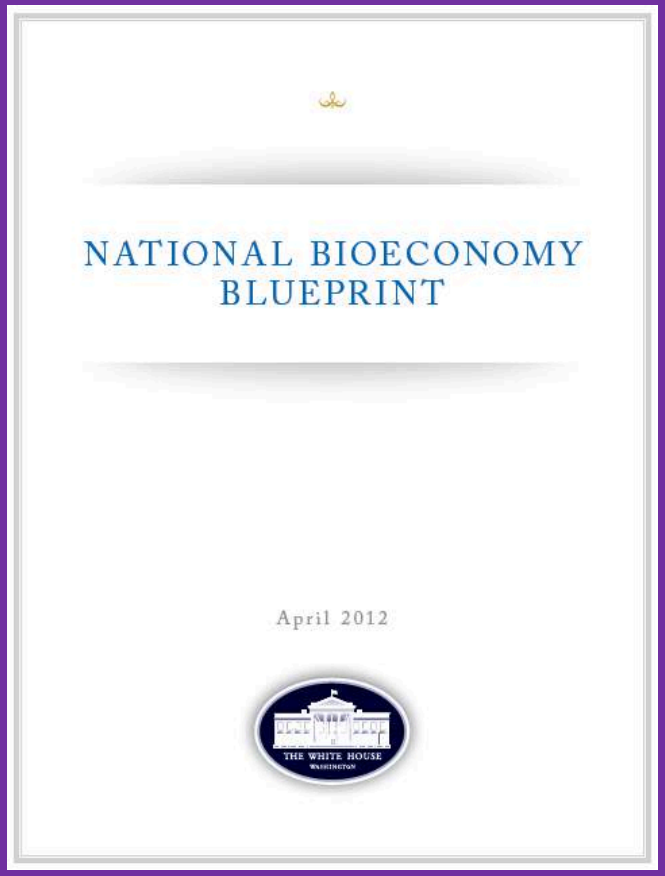
The latest White House move comes while Senator Edward M. Kennedy is pressing a somewhat different approach in Congress. Unfortunately, the Nixon program is only slightly preferable to Senator Kennedy's proposal to establish a new cancer agency outside the National Institutes of Health.

Unwise efforts to set up a special cancer agency threaten to weaken the National Institutes of Health and its comprehensive integrated program of biological research. These pressures for a separate cancer agency inevitably engender similar efforts to set up special research agencies for heart disease, alcoholism and other afflictions. All contribute to further fragmentation of medical research.

The worst aspect of the Nixon-Kennedy duel to gain political advantage from cancer is the possibility that talk of a new research agency may spark unrealistic hopes among the millions of persons here and abroad who suffer from this disease. No general cure for cancer is in sight, a situation which would not quickly be changed even if the country's entire yearly military budget were spent in this field, instead of the few hundred million dollars now under discussion.

The search for an answer to the cancer problem can be equated with neither the Manhattan Project, which produced the atom bomb, nor the Apollo Project, which first put men on the moon. Both of these great efforts were primarily engineering tasks, which attained full momentum after the basic scientific principles were understood. Unfortunately, there is still colossal ignorance about the origin of cancer in all its myriad forms, even though some encouraging progress has been made.

Advances in molecular biology have increased understanding of some of the most fundamental processes of life. The virologists, immunologists, biochemists and radiologists have produced important contributions to the knowledge of cancer and to the effective treatment of some forms of that plague such as leukemia and

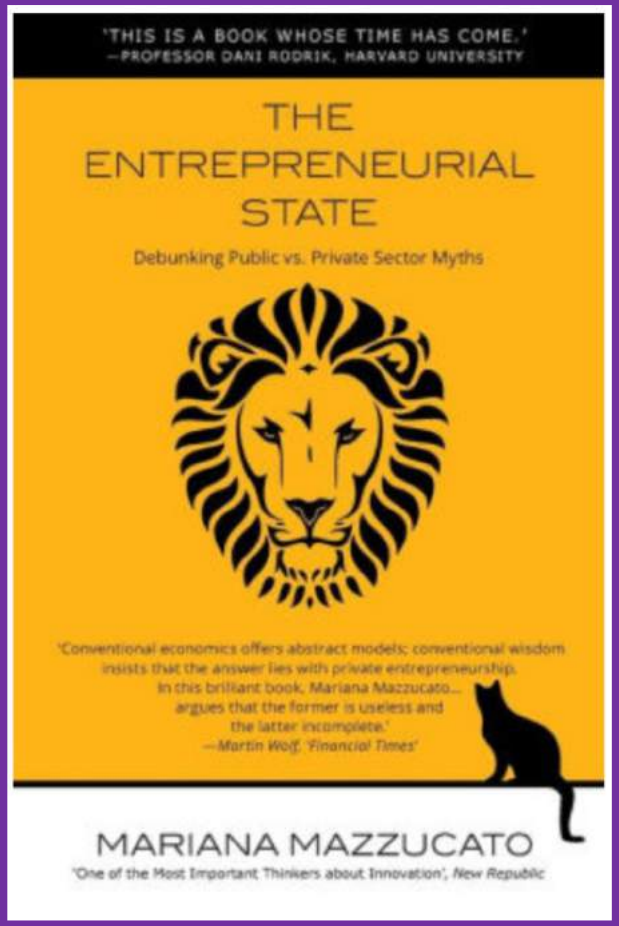


- A document that expresses a sociotechnical imaginary
- "The world is shifting to an innovation economy and nobody does innovation better than America" (Obama 2012)
- "America the innovator"
- "The future bioeconomy"
- A mixture of belief and aspiration, a hope for the future that must be realized

6. Vanguards present “promising” future visions

- Vanguard visions = promises of realizing established sociotechnical imaginaries through specific technologies or programs

- Entrepreneurial activity (in many arenas)



- The State as a source of entrepreneurial action
- DARPA and the technology underlying microcomputers, the internet, etc.
- Silicon Valley as the result of the state's long-term strategic action

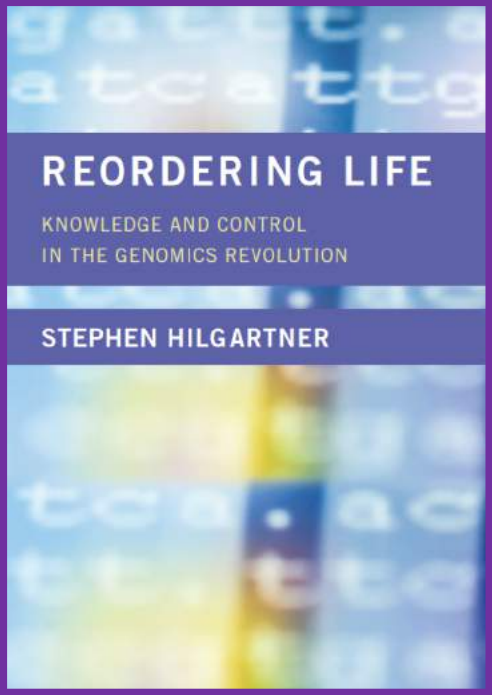
6. Vanguards present promising future visions

- Vanguard visions = promises of realizing established sociotechnical imaginaries through specific technologies or programs

- Entrepreneurial activity (in many arenas)
- Research institutions produce demand for new, exciting visions
- Suppliers of visions emerge

Human Genome Project

- Elite vanguard of scientists propose in mid-1980s
- Initially DOE was interested; NIH not interested
- Much opposition among biologists
- Ongoing selling to US Congress
  - Health
  - Commercial potential
  - International competition in biotech

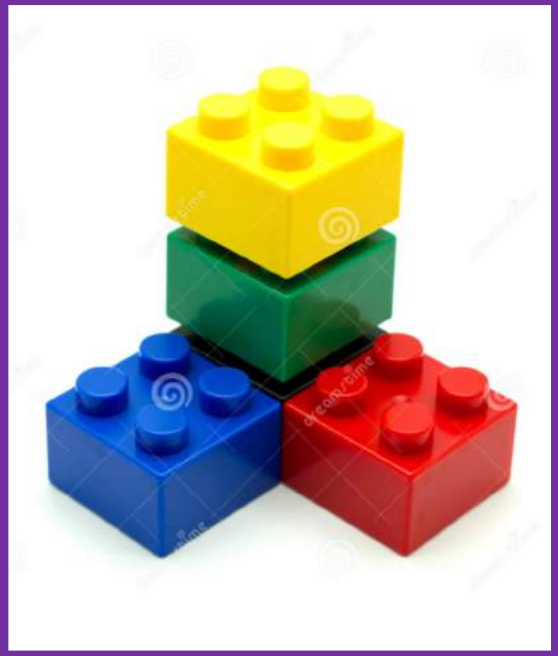


Human Genome Project

- NIH decides it wants to participate
- NAS Committee (1988) reformulates the project
- HGP is launched (1990)
- Watson avoids concentrating money at first

BioBricks™ Vision

- Proposed by scientists from MIT, Stanford, UC Berkeley
- Vision of standardized biological parts that can be assembled
- Plays off the Lego analogy



How do you make such a vision plausible to audiences?

BioBricks

Table 3.1 The computer revolution as a template for imagining synthetic biology

Computers	*Synthetic biology*
Information theory and cybernetics	Information theory and cybernetics
Electronic circuits	Biological circuits
Electronic parts	Biological parts
Information economy	Biocconomy
Startup culture	Startup culture
Open source software	Open wetware
Hackers, cyberpunks	Biohackers, biopunks
Steve Jobs, Bill Gates	Craig Venter (?)

7. The plausibility of visions depends on the experience of the audience

The 7 rules of thumb suggest why it is often hard to fund research on problems that affect large numbers of people who are poor or invisible to elite scientists, institutions, and audiences.