National Assessment of the Current and Future Health of the Academic Research Enterprise

Brad Fenwick

Niels Weertman


What i'm about to tell you is gonna change your life forever. Are you really sure you want to know it?




"Far and away the best prize that life has to offer is the chance to work hard at work worth doing." Teddy Roosevelt




"We are just now perceiving that the university's invisible produce, knowledge, may be the most powerful single element in our culture, affecting the rise and fall of professions and even social classes, or regions, and even nations."

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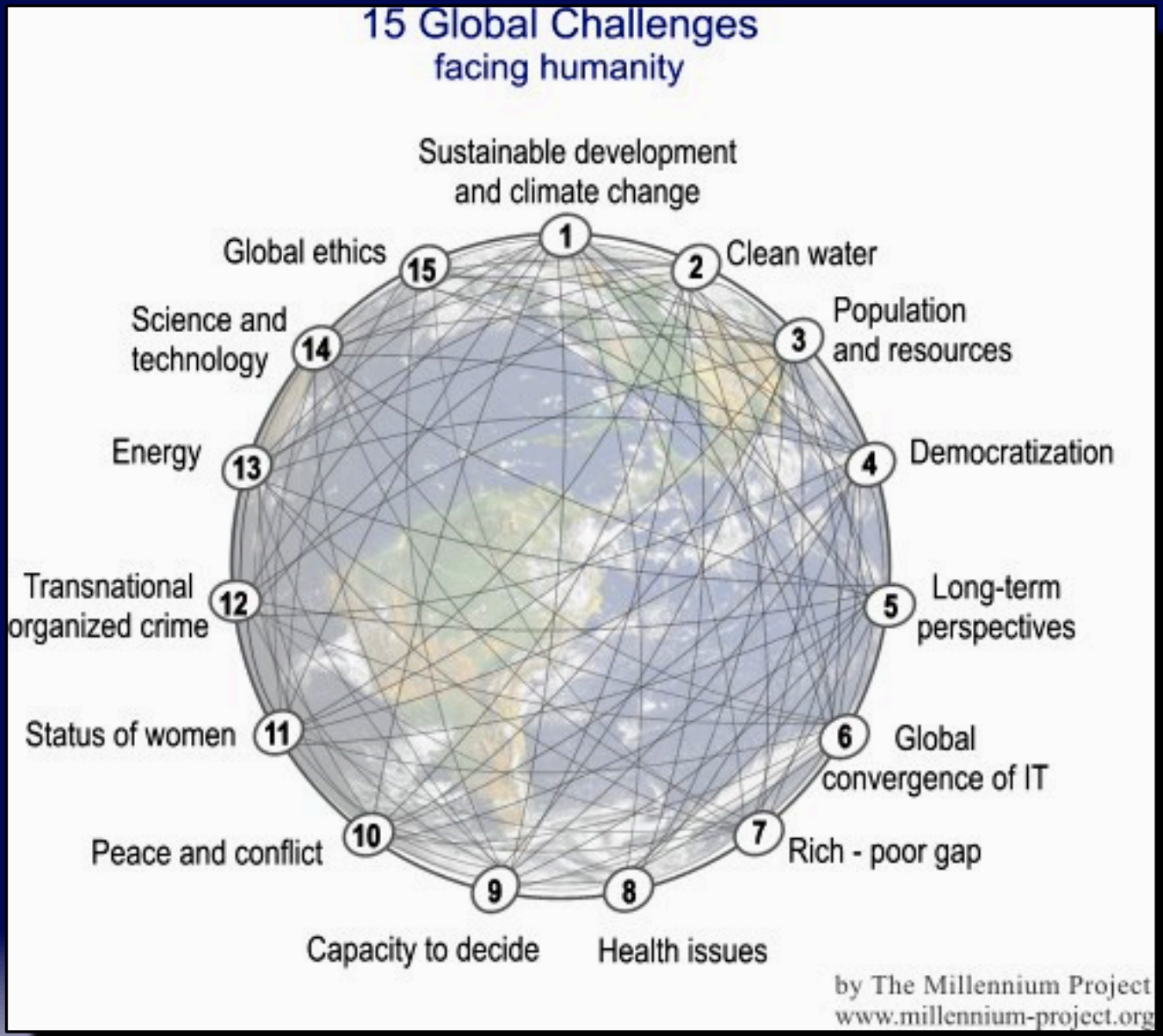
Clark Kerr 1963'


15 Global Challenges
facing humanity
Sustainable development and climate change
1
Clean water
2
Population and resources
3
Democratization
4
Long-term perspectives
5
Global convergence of IT
6
Rich - poor gap
7
Health issues
8
Capacity to decide
9
Peace and conflict
10
Status of women
11
Transnational organized crime
12
Energy
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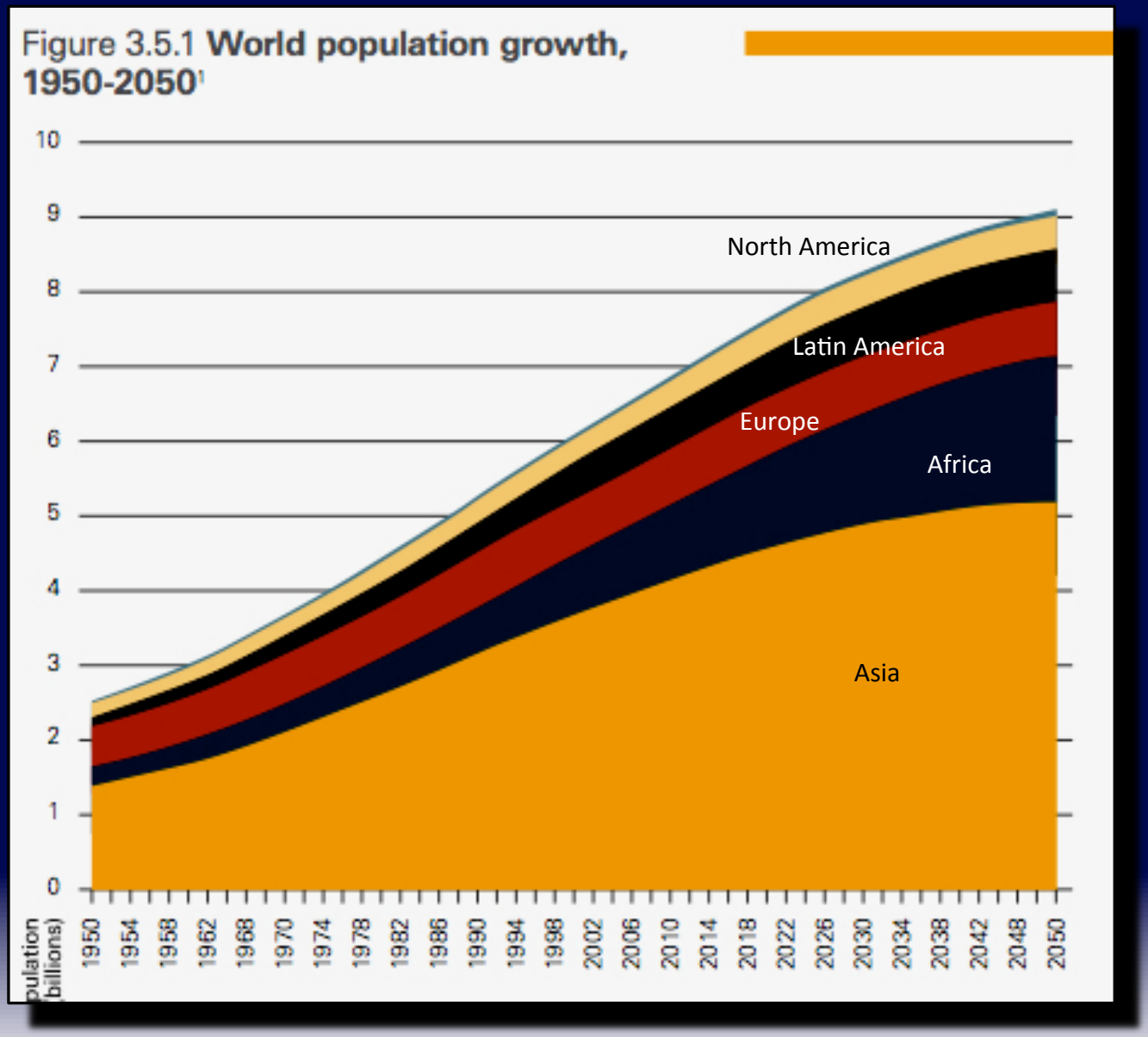
Science and technology
14
Global ethics
15
by The Millennium Project
www.millennium-project.org

Current and Future Environment



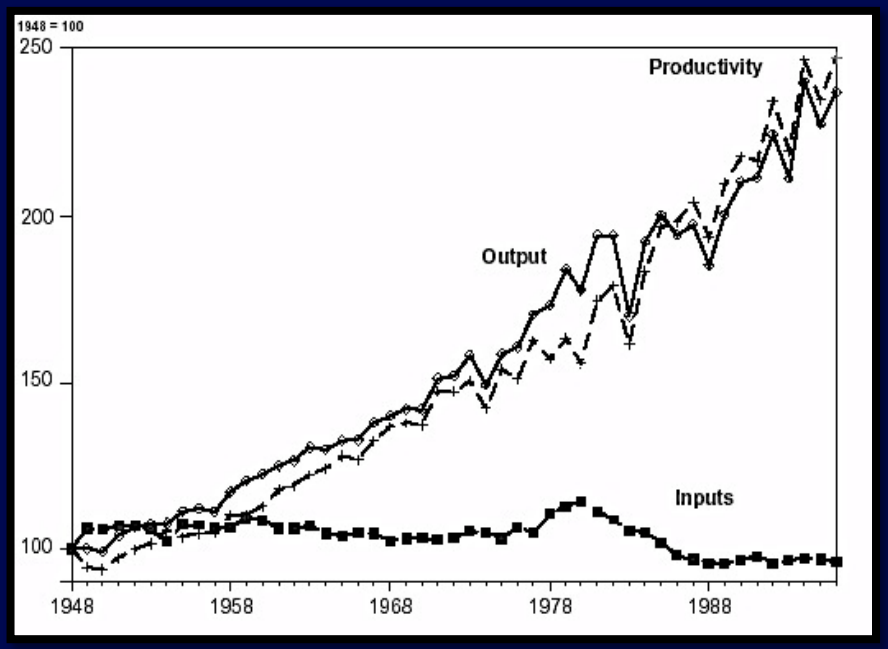
"Academic Research and Innovation is going through a lasting transformational change of historic scope and scale."


KANSAS STATE
COX
pepsi


PLANET
APES


EVOLUTION BECOMES REVOLUTION
RISE
ANE
APE
IN CINEMAS AUG 12

New Measure of Success:
“ PRODUCTIVITY ”



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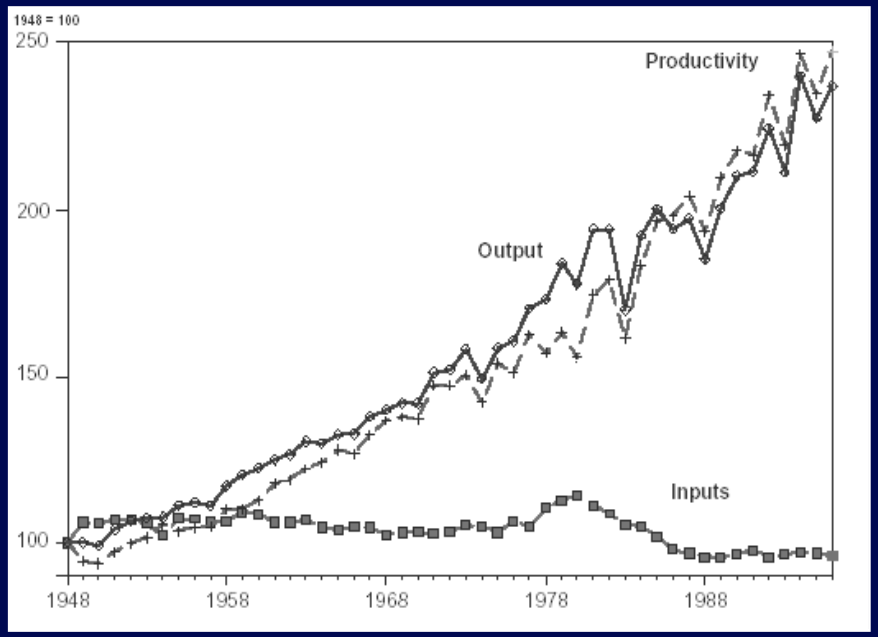

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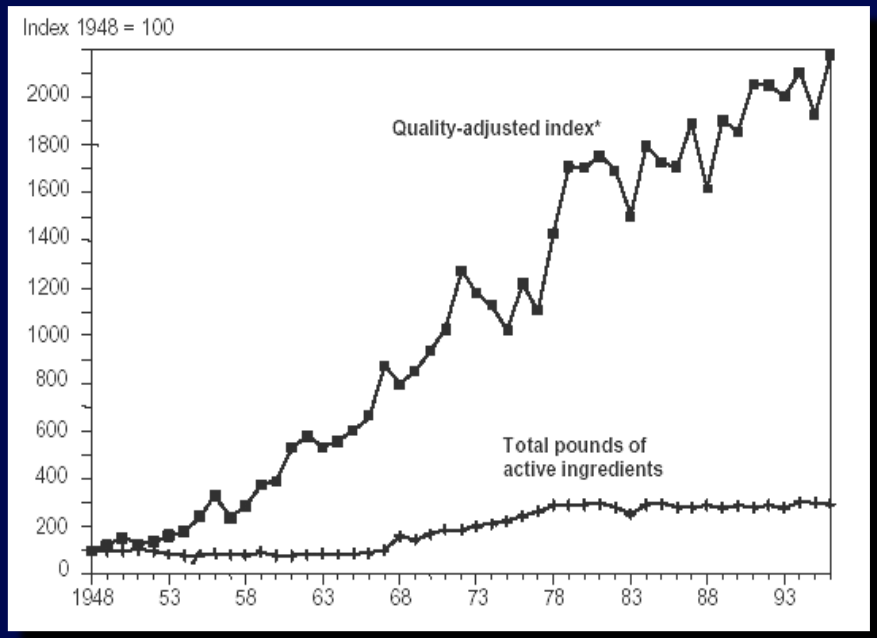

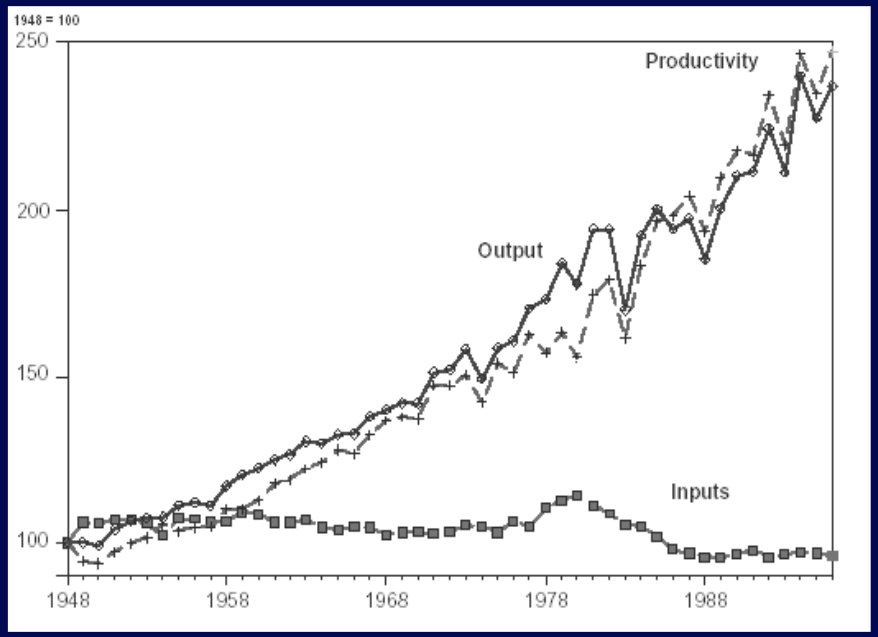

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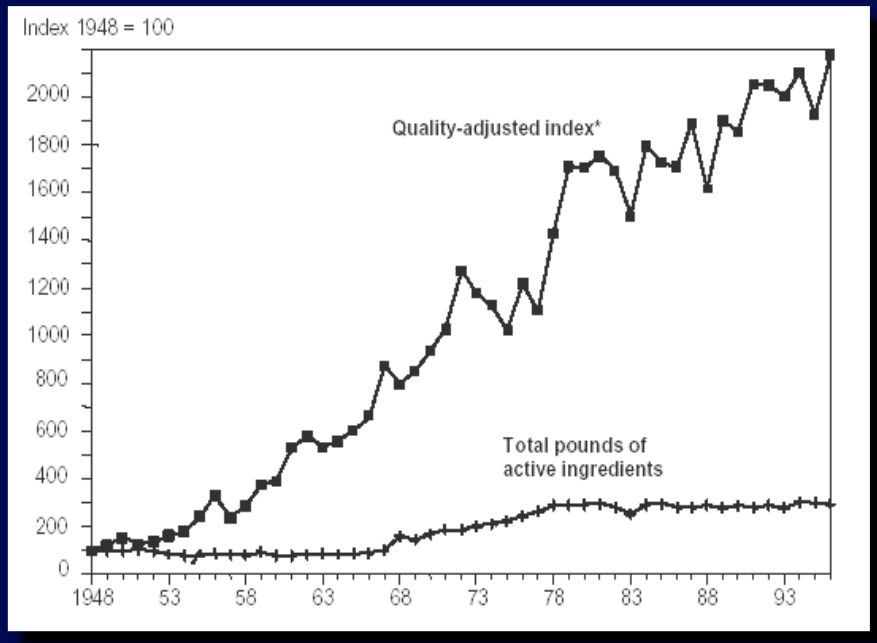
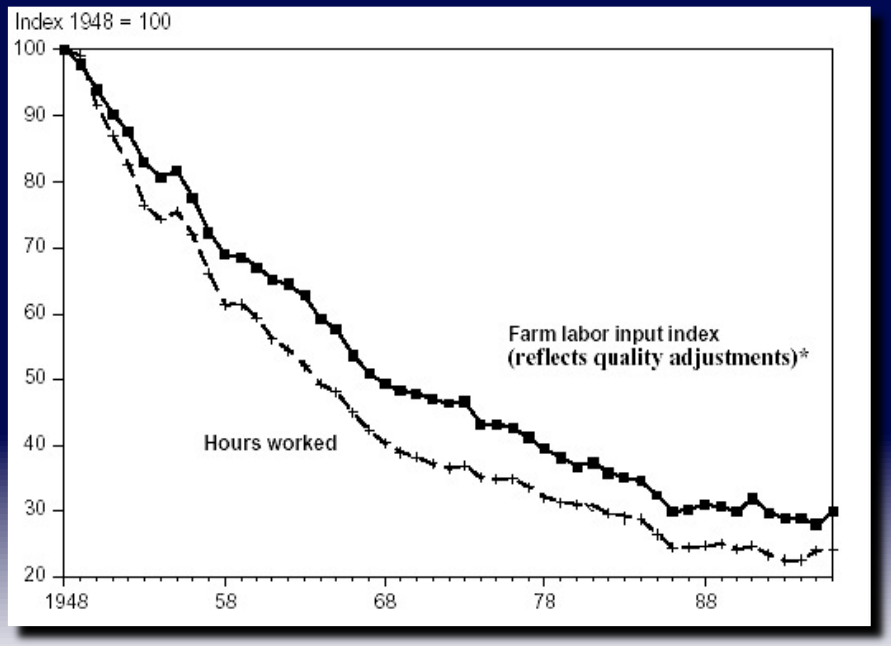
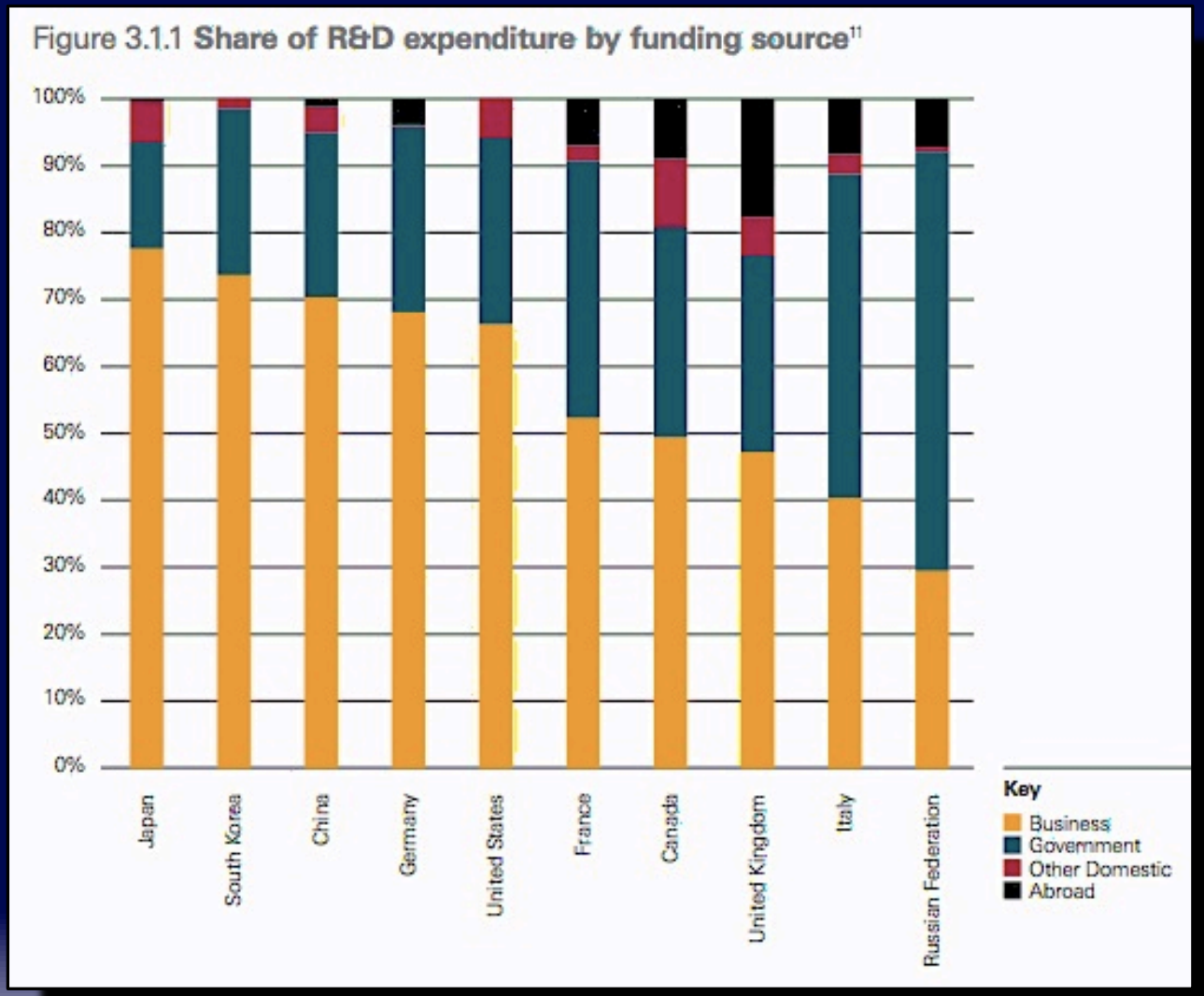




Challenges and Opportunities

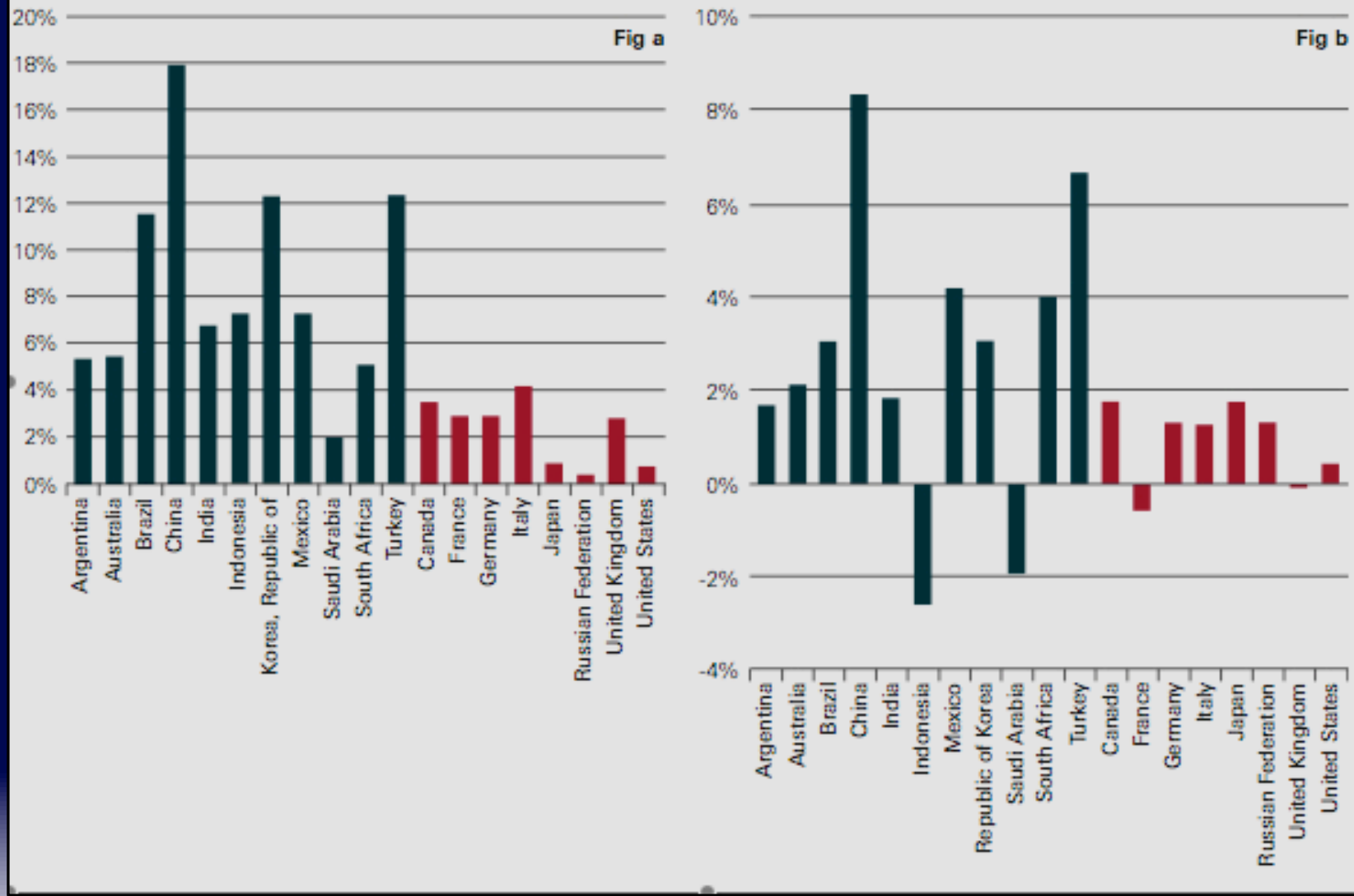


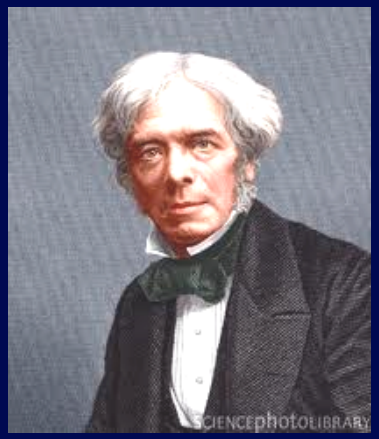
What science is really worth

Spending on science is one of the best ways to generate jobs and economic growth, say research advocates. But as **Colin Macilwain** reports, the evidence behind such claims is patchy.

Figure 1.2. **Science in the G20**

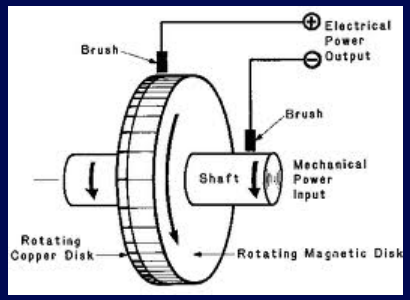
G8 labelled in red. **Fig a.** *Annual growth in publications 1996-2008.*[28]
Fig b. *Annual growth in GDP spending on R&D 1996-2007*[29]

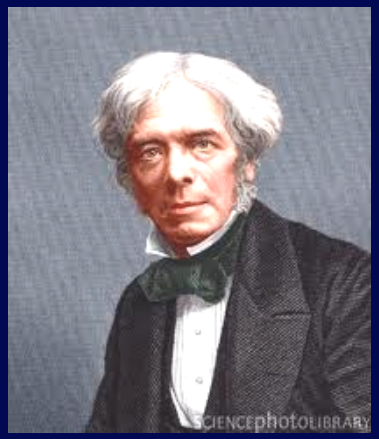




Michael Faraday

Dynamo & Motors





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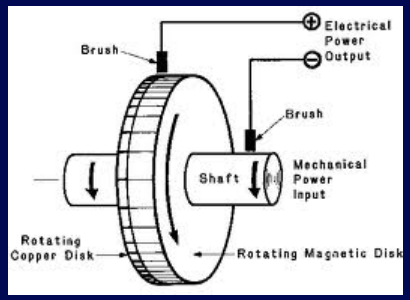

"Why sir, there is every probability you will be able to tax it."

Michael Faraday

"When the rate of change outside an organization exceeds the rate of change inside, the end of the organization is in sight." Jack Walsh

"Control your own destiny or someone else will." Jack Welch

Research Program Development and Administration

"An Increasingly Complex Business"

- Competitive, Interdisciplinary, Globalized
- Increasing institutional expectations
- Multiple points of failure
- Regulated and scrutinized (compliance)
- Increasing reporting expectations (ARRA)
- Underappreciated management / leadership challenges
- Growing levels of frustration

Economics of Research and Innovation

"*Winner-take-all*" Competitive System

Small difference in performance translates into large difference in rewards. Unsuccessful competitors have little to show from the investment.

"An auction where everyone pays, but only the winner benefits."

Economics of Research & Innovation

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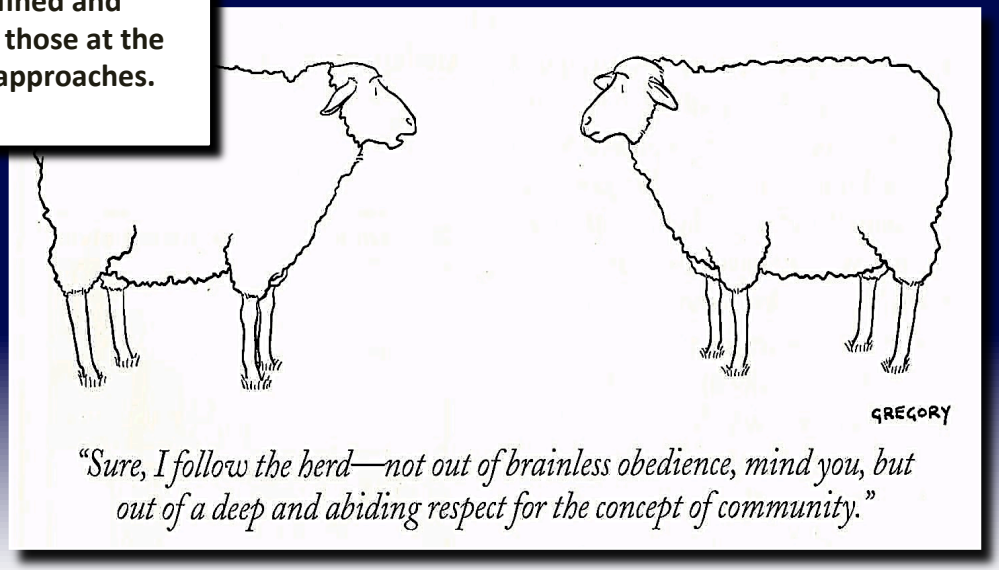

"Sure, I follow the herd—not out of brainless obedience, mind you, but out of a deep and abiding respect for the concept of community."

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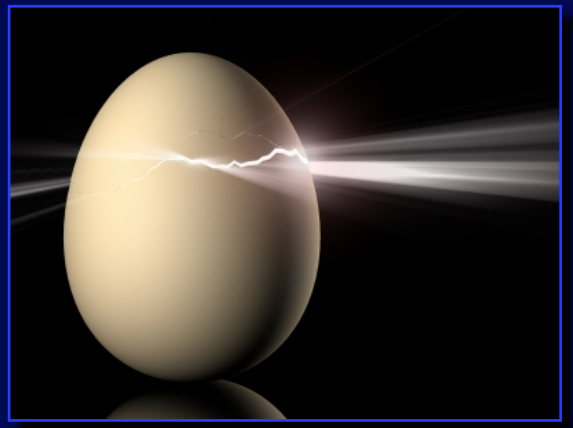
3). Because strategies for success are ill-defined and change, challengers mimic the strategies of those at the top rather than looking for game changing approaches.

4). Rewards and recognition accumulate to the most successful and are highly visible, which encourages others to get in the game or continue to play, even if they lose more often than they win.



The Research and Innovation Race

The Research and Innovation Race

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Know which way to run.

The Research and Innovation Race

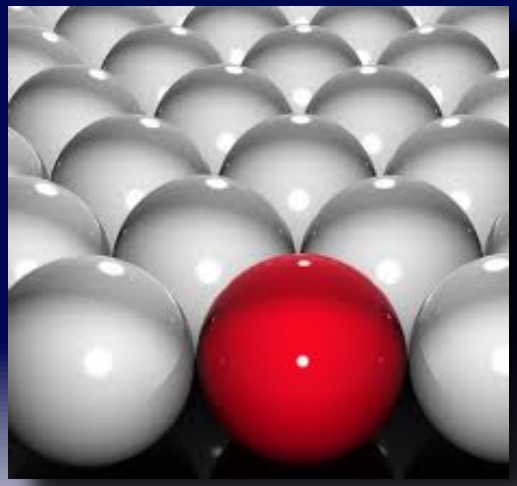
Know which way to run.
Better to run together.

The Research and Innovation Race

Know which way to run.
Better to run together.
Learn to run a better way.

Economics of Research & Innovation

Success comes from innovations that fundamentally changes the terms of what it means to have a "competitive advantage."



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JISC

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http://www.researchdatatools.com

UK Study:

Exploratory
21 Universities (54% of funding)
“Semi-structured” Confidential Interviews
Workshops

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Findings:

✓ Identified common set of information needs.

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UK Study: Exploratory
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Value: Exceptionally well received by the academic community, funders, and suppliers.

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Follow-up: Second "Solution-Drive" Project

U.S. – Study: Purpose and Objectives

- ✓ A broader understanding and wider appreciation of the challenges related to research program development and administration.
- ✓ A bottom-ups understanding of current research management systems and the leadership landscape and challenges.
- ✓ Focus on how management and performance data is being gathered and used to inform strategic decisions and evaluate success at a variety of levels.
- ✓ Not a system, solution-driven, or problem specific study (Exploratory).
- ✓ Develop an understanding of evolving institutional needs (information intelligence, leadership, strategy, and tactics) that are independent of specific disciplines or institutional type.




Study Design and Implementation

- ✓ University visits (25, public and private).
- ✓ Confidential discussion interviews with Vice President/Chancellor for Research, directors of research offices, IT directors, and staff responsible for the administration of research.
- ✓ High level links and contacts in major stakeholder organizations.
- ✓ Workshops and group discussions with project participants and others.
- ✓ Detailed summary report, guidance, and share good practices.
- ✓ Publication and wide dissemination of summary findings through freely available printed reports, web resources, and meeting presentations.
- ✓ Next steps?




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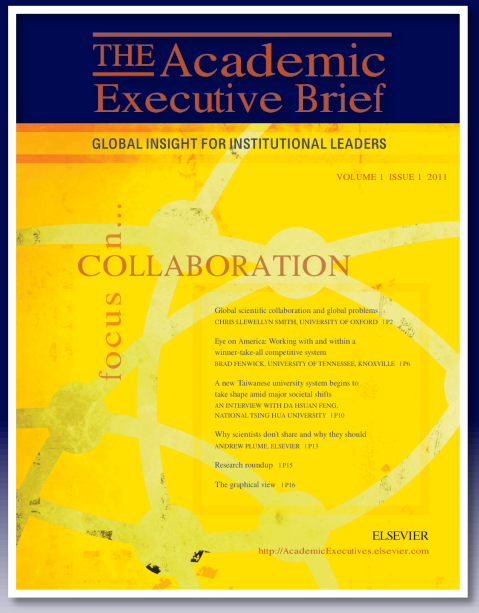
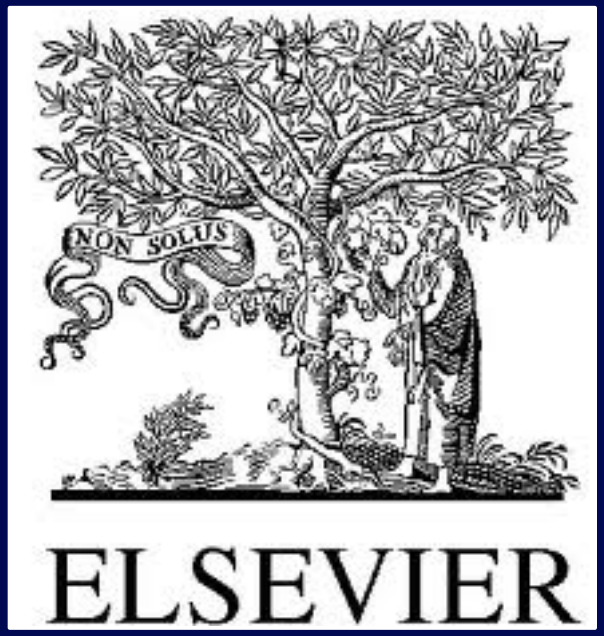
A global company headquartered in Amsterdam, employing more than 7,000 people in 24 countries.

Global community of 7,000 journal editors; 70,000 editorial board members; 300,000 reviewers and 600,000 authors.

Publishes around 2,000 journals and close to 20,000 books and major reference works.





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Niels Weertman

Elsevier's office in New York City, directs the development of Scopus and the SciVal suites. Niels manages a team of experts in analytics with extensive experience in multi-source complex analysis of competitive research strengths at the national and global level.

“Topics”

Strategy and Vision:

- ✓ Strategic objectives and operational strategy.
- ✓ Program specific tactics.

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Future Directions and Critical Priorities

Questions and Input

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Level of confidence in the future and value of academic research?


REALITY
CHECK
AHEAD

“Selected” Emerging Findings - Themes

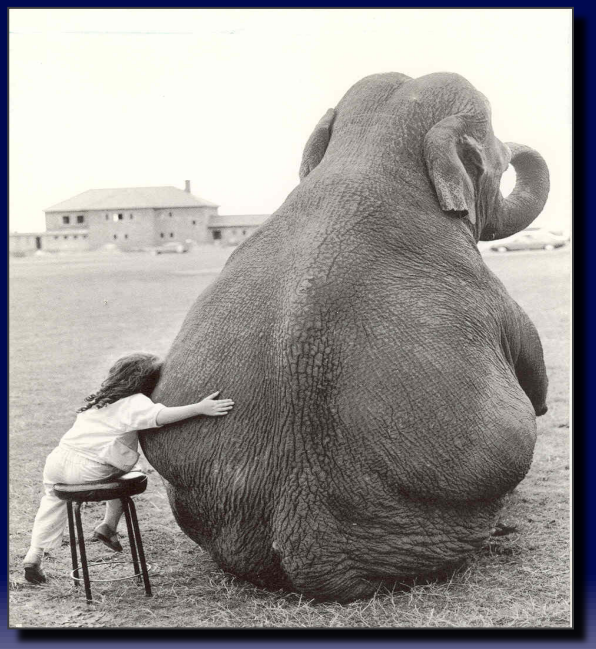
Difference in the Levels
of Concern and Urgency

“Selected” Emerging Findings - Themes

Growing Administrative / Management Stress

“Selected” Emerging Findings - Themes

Growing Administrative / Management Stress



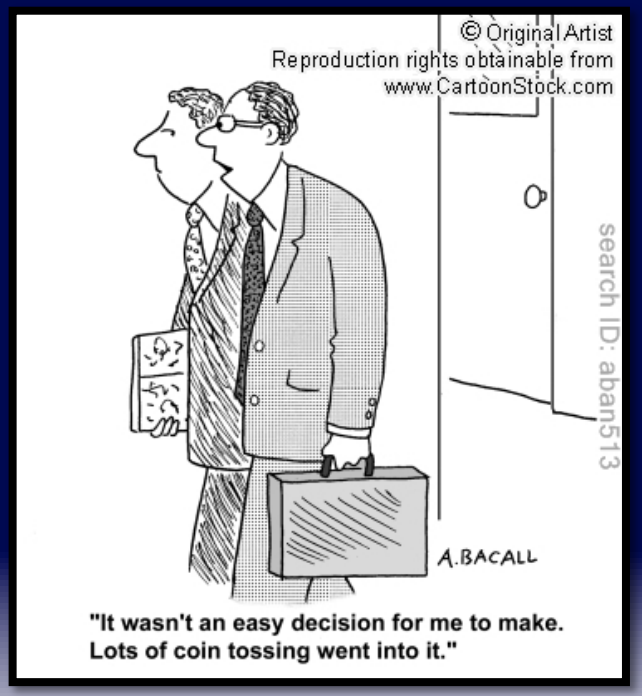
Poor Understanding and Appreciation

“Selected” Emerging Findings - Themes

Ranking / Measurement Systems

“Selected” Emerging Findings - Themes

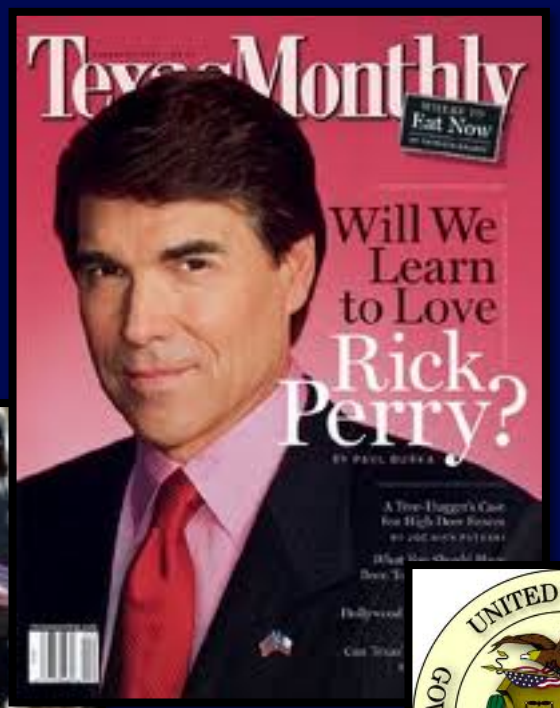
Ranking / Measurement Systems



Information / Decision Support Systems

“Selected” Emerging Findings - Themes

Political and Sponsor Priorities



“Selected” Emerging Findings - Themes

The Challenge/Problem is Painfully Clear

The "Standard Solution" has Worked Before…


Greater Challenge – Bigger Problem

Same Solution – Once Again


MICHAEL LONG
TRUCK & CRANE HIRE


MICHAEL LONG
TRUCK & CRANE HIRE

“Selected” Emerging Findings - Themes

Institutional Differentiation

Unintended Consequences

“Selected” Emerging Findings - Themes

Institutional Differentiation

Capacity Consolidation

Unintended Consequences

Consolidation and Concentration of Academic Research:

Top Producers are Growing at a Faster and Increasing Rate.

- ✓ Citation Output is Higher and the Gap is Increasing
- ✓ 19 Universities produced 47% of all citations

CITATION OUTPUT

Institution	1981–85	1993–97	2005–09
MIT	2.14	2.16	2.28
Caltech	2.13	2.02	2.18
Princeton University	2.19	2.07	2.11
University of California, Santa Barbara	1.75	2.28	2.04
Stanford University	2.05	2.08	1.96
Harvard University	1.98	2.14	1.94
University of California, Berkeley	1.79	1.77	1.92
University of Colorado, Boulder	1.67	1.65	1.86
University of Chicago	1.98	1.92	1.85
University of Washington System	1.78	1.76	1.82
University of Pennsylvania	1.62	1.73	1.77
University of California, San Francisco	1.86	1.89	1.76
Johns Hopkins University	1.69	1.85	1.74
Columbia University	1.70	1.83	1.74
University of California, Los Angeles	1.62	1.61	1.74
Northwestern University	1.62	1.69	1.73
Boston University	1.35	1.59	1.71
Yale University	1.91	1.89	1.71
University of Rochester	1.46	1.60	1.71
U.S. UNIVERSITY average	1.37	1.40	1.37

PUBLICATION OUTPUT

Total papers 1981–1985	Share U.S. (%)	Institution	Total papers 2005–2009	Share U.S. (%)
469,201	48.5	AAU	905,522	56.1
25,630	2.65	Harvard University	68,146	4.22
13,071	1.35	University of Michigan System	33,084	2.05
10,567	1.09	Johns Hopkins University	31,503	1.95
16,941	1.75	University of California, Los Angeles	31,108	1.93
12,841	1.33	University of Washington System	30,320	1.88
13,366	1.38	Stanford University	28,318	1.75
10,248	1.06	University of California, San Diego	27,265	1.69
15,176	1.57	University of California, Berkeley	27,021	1.67
11,646	1.20	University of Pennsylvania	26,579	1.65
10,691	1.10	Columbia University	26,427	1.64
10,219	1.06	University of Maryland System	25,844	1.60
14,419	1.49	University of Minnesota System	25,497	1.58
13,919	1.44	University of Wisconsin, Madison	24,553	1.52
14,222	1.47	Cornell University	23,483	1.45
10,166	1.05	University of Florida	23,226	1.44
7,483	0.77	University of Pittsburgh	22,457	1.39
9,490	0.98	University of California, Davis	22,362	1.38
7,880	0.81	Duke University	21,954	1.36
8,715	0.90	Penn State University System	21,689	1.34
11,150	1.15	Yale University	21,676	1.34
8,792	0.91	Ohio State University	21,380	1.32
8,889	0.92	University of Colorado System	21,066	1.30
10,027	1.04	University of California, San Francisco	20,691	1.28
11,651	1.20	MIT	20,609	1.28
6,975	0.72	Texas A&M University System	19,432	1.20

“Selected” Emerging Findings - Themes

Unintended Consequences

Institutional Differentiation

Capacity Consolidation

Program Fragmentation and Isolation

“Selected” Emerging Findings - Themes

Unintended Consequences

Institutional Differentiation

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Program Fragmentation and Isolation

Loss of Critical Mass

“Selected” Emerging Findings - Themes

Unintended Consequences

- Institutional Differentiation
- Capacity Consolidation
- Program Fragmentation and Isolation
- Loss of Critical Mass
- Disengagement and Loss of Mission

“Selected” Emerging Findings - Themes

Unintended Consequences

Institutional Differentiation

Capacity Consolidation

Program Fragmentation and Isolation

Loss of Critical Mass

Disengagement and Loss of Mission

“National” Universities

Questions…

Comments…

Suggestions…