



MNSES 9100: The Modern University:

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Science in society?

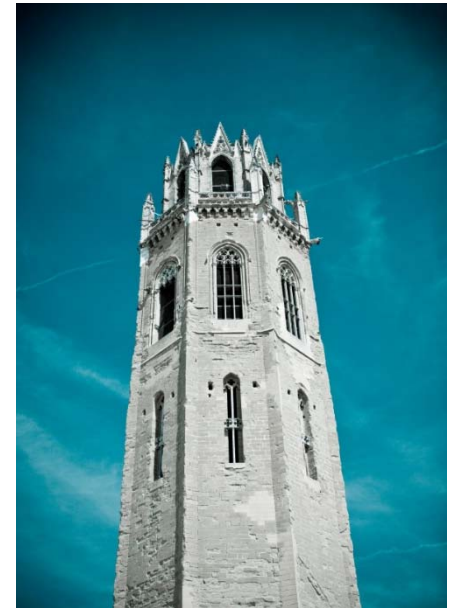
- A source of truth/authority?
- A source of income?
- An interested party?
- A commercial actor?



Trust Me
I'm a
Scientist

What are universities for?

- What do they contribute to society?
- What are their underlying values?
- By what criteria should they and their employees be judged?





In 2020...



**Why would a society want a
university?**

Traditional task of universities

- Research
- Teaching
- "Third task" – public outreach

'Academic freedom'

- The first documentary evidence of this comes early in the life of the first university. University of Bologna adopted an academic charter, the Constitution Habita in 1158 or 1155, which guaranteed the right of a travelling scholar to unhindered passage in the interests of education. Today this is claimed as the origin of "academic freedom".

Wikipedia:

- **Academic freedom** is the belief that the freedom of inquiry by students and faculty members is essential to the mission of the academy, and that scholars should have freedom to teach or communicate ideas or facts (including those that are inconvenient to external political groups or to authorities) without being targeted for repression, job loss, or imprisonment.

Humboldtian university

Unity of research
and teaching,
freedom of teaching,
and academic self-
governance



”The idea of the university”

- The function of the university was to advance knowledge by original and critical investigation, not just to transmit the legacy of the past or to teach skills. Teaching should be based on the disinterested search for truth, and students should participate, at however humble a level, in this search. Hence the classic view that the university was a 'community of scholars and students' engaged on a common task.

Why this position?

- Because scientists pursue the truth? And truth is a higher value that should be promoted?
 - How do we recognize truth?
- Human welfare is important - knowledge is useful, and we cannot tell what leads to novel breakthroughs?

”Knowledge economy”

- Increasing focus on knowledge as source of economic growth and competitiveness
- Science as source of profit for states – through deciding what kinds of science should be carried out (research programmes, industry collaboration...), or making sure science is used in profitable way (patenting, setting up companies), or ensuring that research is cost-effective (evaluations, incentive structures management methods...)

Mode 2

- *The new production of knowledge: the dynamics of science and research in contemporary societies.* (Gibbons et al, 1994)



Value to society

- British higher education institutions contribute 45 billion GBP to the national economy (Universities UK, 2006)
- Australian Universities contribute 22 billion AUD
- Harvard says its economic impact is more than USD 3.4 billion

Schwartz, 20006

Threats to the norms of science

- In a recent survey of 2200 medical scientists, 410 admitted to holding back publication of their research results. They wanted to ensure that they, and their commercial sponsors, had time to safeguard their property rights (Newman, Couturier and Scurry, 2004).
- A Stanford University study found that 98% of the research papers sponsored by drug companies report that the companies' drugs are effective. In contrast, only 79% of non-company-sponsored research papers report positive results (Washburn, 2005).

Schwartz, 2006

- Studies funded by a pharmaceutical company have been found to be four times more likely to give results favourable to the company than independent studies (Lexchin, et al, 2003)

Bad Pharma™

Ben Goldacre

Bestselling author of *Bad Science*

How drug companies
mislead doctors and
harm patients

364 pages



Jonas Salk – Polio vaccine

- In 1955, Jonas Salk launched a human trial of the polio vaccine he had developed over years of research.
- It was hugely successful, and Salk became famous.
- But he did not become rich, and neither did the University of Pittsburgh where he worked.
- Instead, they licensed the vaccine to many companies, to enable the vaccine to become widely disseminated .



DEVELOPER,
POLIO VACCINE



“RISKS, I like to say,
always pay off. You
learn what to do or
what not to do.”

- Inducted: 1976 -

Who is to benefit?

- Only 10 % of the world health burden receives 90 % of total biomedical research funding, according to the Global Forum for Health Research
- Diseases primarily found in the developing world receive very little funding.

Neglected diseases

- Chagas disease (Latin America)
 - 21,000 deaths per year
- Trypanosomiasis (300 000 cases every year in Africa)
 - About 48,000 people died of it in 2008
- Magnesium's position as best treatment of eclampsia only established in 2002 (used from 1906), because no commercial interest in magnesium, and fatalities mostly in developing world.

Ownership of Scientific Results

- *Patents*: inventions
- *Intellectual Property Rights*: Copyright
- *Trade Related Intellectual Property Rights*:
TRIPS

Contract Research

- Which PhD projects are funded by industry, EU projects, NFR, ...
- Are any projects under contracts linked to patents or that restrict publication of results for other reasons?

Mertonian Norms (CUDOS)

- **Communalism:** scientific knowledge should be shared as widely and quickly as possible
- **Universalism:** independent of the personal or cultural status of the scientist
- **Disinterestedness:** scientific results should be free from personal or corporate biases
- **Originality:** Research should be novel
- **Scepticism:** Results should be vigorously tested



Could new standards threaten norms of science?

- Commercial pressure
- Publication pressure
- Limited encouragement to engage in teaching and public outreach

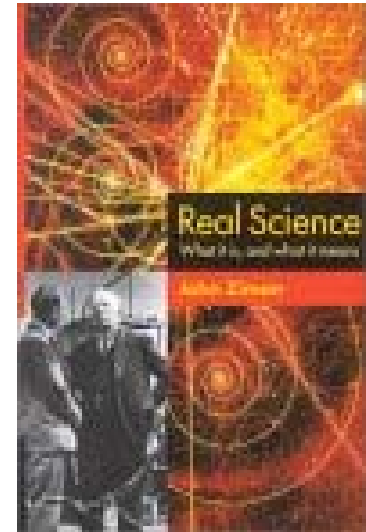
Is science losing its objectivity?

John Ziman

The philosophy of science is not independent of the way research is organized. Can scientists produce objective knowledge in a world where their research is increasingly directed towards making money or meeting social needs?

PLACE: The new norms (Ziman)

- **Proprietary** – not communal
- **Local** – researchers concentrate on local technical problems, which may not contribute to general understanding
- **Authority** – vested in a managerial hierarchy, not the individual researcher
- **Commissioned** – to solve specific problems
- **Expert** – rather than a creative person



John Ziman: Real Science. CUP (2000)