Commercialisation of science - from academic to corporate science

« Contact us now to find out
how we can help you commercialise your science. »*

Claudia Neubauer, Fondation Sciences Citoyennes
April 16 2010, *Integrity of science under attack*, ENSSER in cooperation with the EEA

*http://www.cbsl-uk.com

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"La Science devrait nous rendre maîtres et possesseurs de la nature."

Science should make ourselves masters and possessors of nature.

Descartes (1596-1650)

science to release men of the constraints of reality

science as a tool of knowledge but also as a tool of power

In modern times, Science has always been "impure", at least it has maintained complex, intimate and multiple relations with both the market and the political sphere, and scientists have been included in large social networks touching the worlds of power and economy.

The concept of "pure" science (versus applied science or finalised research) is a concept which appears only after the French Revolution and gradually builds up during the nineteenth century, partly as a self-representation of the scientific community.

translation from a text of the French historian A. Dah

Recent decades have seen significant changes in the relations between science and society.

The former tacit contract between science and society which earned signification in a broader social commitment marked by the pre-eminence of an redistributing interventionist modern state is more and more deregulated.

Today, science is even more « impure » than ever before, and this for several, sometimes antagonist, reasons.

A few examples of different places and different levels where the commercialisation of science takes place

European Policy - Framework Programmes of Research and Development,
- European Technology Platforms,
- Communication of March 2010 of the European Commission

Universities

Companies for scientific results commercialisation

Research results

Patents

Scientific integrity

Several mutations seem significant in contemporary science:

- in terms of objects and issues: complexity, inter-disciplinarity, importance of technical tools (computer) and simulation methods which enable to grasp them

- a growing direct steering of knowledge production through the market and the development of private markets and patents on research methods and fundamental knowledge. (the state as "entrepreneur of science", supporting fundamental research done by academic communities which are often its employees (public service) tends to be winded)

- with the emergence of a socio-political demand of expertise, the co-construction of scientific domains is not new, but nowadays we assist to a more and more frequent development of scientific-political objects constructed to be mobilised in political negotiations (ex. models in environmental issues).

- the development of public debates on knowledge, the opening up of scientific institutions and the engagement of the public (“profanes”) into arenas of innovation negotiation once reserved for researchers, policy-makers and business leaders (ex. patient associations, GMO debate, participatory research, etc.).

European Framework Programmes of Research and Development

Short semantic analyses

	FP5	FP6	FP7
Industry, SME	53	52	50
Competitive*	24	21	**91**
Business, economy	8	15	24
Total	**85**	**88**	**165**
Citizens	7	21	15
Democracy	0	3	2
Civil society	0	1	1
Total	**7**	**25**	**18**

=> FP8 negotiations start in 2010

European Technology Platforms and Joint Technology Initiatives

The idea of European Technology Platforms (ETPs) emerged in a context of a growing focus of research policy in general and of Framework Programmes in particular on competitiveness and support to industry.

ETPs were created to **incite industry to invest more in R&D,** ensure a better coordination within the industrial sector, and offer industry a **bridge with the research world**.

Through ETPs, Industry has an important influence on the **elaboration** of the **annual work programmes of FP7.**

=> **Strategic Research Agendas**: define medium to long-term research and technological development objectives in high impact sectors and lay down markers for achieving them.

One aim of ETPs is to explore and to develop the potential for large-scale, long-term Public-Private Partnerships (PPP), so called "Joint Technology Initiatives". JTIs are primarily implementations of ETPs and address the competitiveness of European industry.

37 ETPs exist today (Medicine, Computing, Aeronautics, Nanoelectronics, etc.)

"*As such, [ETPs] are proving to be powerful actors in the development of European research policy, in particular in* ***orienting FP7 to better meet the needs of industry*** *[…]*

The Strategic Research Agendas of the European Technology Platforms have ***a major influence on the Cooperation Work Programme*** *[…]*

The way the European Technology Platforms influence the Work Programmes is ***unique in the history of the Framework Programme***."

(Dan Andrée, *A rough guide to the FP7 work programmes*, Government Offices of Sweden, Ministry of Education and Research, Stockholm – Brussels, March 2008)

keep in mind => FPs are **public** research programmes

Communication from the Commission to the European Coucil

(March 2010)

Europe 2020 -
A European Strategy for smart, green and inclusive growth

Smart growth - developing an economy based on knowledge and innovation

« Smart growth means strengthening knowledge and innovation as drivers of our future growth. This requires improving the quality of our education, strengthening our research performance ... and ensuring that innovative ideas can be turned into new products and services that create growth. »

« At national level, Member Stats will need :
- To reform national R&D and innovation systems to foster excellence and smart specialisation, reinforce cooperation between, universities, research and business, ...
- To prioritise knowledge expenditure, including by using tax incentives and other financial instruments to promote greater private R&D investments. »

Table at the end: “Smart growth: Innovation: EU flagship initiative “Innovation Union”.
Its aim is to complete the European Research Area, address grand challenges, improve framework conditions and access to finance for business and combine supply with demand-side policies.”

Universities

=> a strong de-democratization of universities

- universities become increasingly "market institutions"
- growing neoliberal conception of higher education (an « ethics of the market »)
- increasing loss of the cultural and social dimensions of research and education
- creation of "external councils" = universities are deprived of their steering and self-management power,
- universities are increasingly encouraged to accept the presence of private investors in decisional bodies
- « presidentialisation »: the university president has more power vis-à-vis his internal bodies than before including on decisions on budgets
- systematic under-financing of universities (ex. access to scientific literature)
- dispraise of public universities in comparison to private universities
- marginalisation of fundamental research for the profit of applied and marketable research
- enforced distinction between elitist and other universities

Companies for scientific results commercial

Example from http://www.nerc.ac.uk/using/business/commercial/

Natural Environment Research Council

Commercial successes from NERC science
The commercialisation team has brought to market a wide variety of ideas and innovations, helping to register patents, negotiating licensing deals, and setting up spin-out companies or joint ventures with commercial organisations.

Scientists - why commercialise your idea?

NERC aims to encourage you to commercialise your ideas.
The benefits are:

- **Recognition/reputation for you and your research establishment**
- **Career progression**
- **Seeing practical outcomes**
- **Exploiting synergy between science and business**
- **Access to new income streams**
- **Fun and intellectual stimulation**

Research results

Are scientific and medical experts able to take corporate money without subtly altering their scientific and medical views?

According to Dan Fagin and Marianne Lavelle in their eye-opening book, **Toxic Deception**, when chemical corporations paid for 43 scientific studies of **four chemicals** (atrazine, alachlor, perchloroethylene, and formaldehyde), 32 studies (74 percent) returned results favorable to the chemicals involved, five were ambivalent, and six (14 percent) were unfavorable.

When independent non-industry organizations – government agencies, universities, or medical/charitable organizations – paid for 118 studies of the **same four chemicals**, only 27 of the studies (23 percent) gave results favorable to the chemicals involved, 20 were ambivalent, and 71 (60 percent) were unfavorable.

Peter Montague, ***http://www.trwnews.net/Documents/Dow/corporate_science_CHEJ.htm***

Patents

- traditional industrial patents <=> patents on life: **extension** of the patenting regime to cover gene sequences, micro-organisms, cells, plants and animals created through genetic modification

- **globalisation** of intellectual property rules under the World Trade Organisation's (WTO) agreement on Trade Related Intellectual Property Rights (TRIPS)

- patents privilege **a certain type of 'knowledge'** over others (knowledge that can be patented and traded in the knowledge-based economy) (GeneWatch)

- genes are still considered as the **master molecules of life** => idea of **power and control**

- patent on a gene justifies patent on the whole organism (GMO)

- patents impede scientific searches

- patents on life are directly linked to the mercantilisation of research

- **“juristic sterility of plants”** = for the farmer it is legally impossible to seed (in parallel to the biological sterility where it is biologically impossible to seed) (C. Vélot)

The **effect that patents have on research priorities** has been much less widely discussed than their impacts on access to medicines or to research data.
Treating knowledge as property raises questions not only about who gains access to this knowledge and who benefits from its use and sale, but also about how patentable knowledge (including 'genetic information') is defined and may become prioritised above other types of research.

Helen Wallace, GeneWatch, 2009

Scientific integrity

commercial competition <=> (ideal of) scientific production

One cannot expect from a scientist to be first of all “competitive” and at the same time hope that this priority would not have a consequence on his deontology. (Jacques Testart)

- an excessive use and misappropriation of the scientific authority in order to sell and to promote.

- open creation and sharing of knowledge (publication)
<=>
private appropriation of knowledge (confidentiality, industrial secret)

Corporate interests influence:

research agendas: priorities, orientations

nature of the research process: open-ended questions, sharing of ideas with colleagues, with the public

results presentation: bias, non publication of negative results

publishing: industrial secret, commercial secret, generalised competition amongst scientists

scientific integrity: conflicts of interests, contracts, spin-out companies, IPRs, whistle blowing, science based policy, scientists like lobbyists (GES case)

potential for misuse: clinical trials

visions: societal dévelopment

How to step out of the dominant dogmas of growth and competitiveness which shape the relation between science and society?

Some few examples of actors and initiatives

Discourse: Manifesto on the future of knowledge systems, definition of what is “modern”

Initiatives: Printemps 2010 and Bologna burns (universities against the Lisbon strategy and the Bologna process), Word Social Forum, World Forum on « sciences and democracy »

Organisations of scientists: INES, UCS - USA, UCCS -Mexico, ISIS, SGR, ENSSER

NGOs: ETC Groups, GeneWatch, Friends of the Earth, Third World Network, Via Campesina, Anti-GMO organisations, Fondation Sciences Citoyennes

Political tools: Aarhus convention

Artists, cineasts: The World according to Monsanto (Marie-Monique Robin), An inconvenient truth (IPCC)

Personalities: philosophers, sociologists, Vandana Shiva, Aminata Traore (Mali)

Campaigns: letter to EC commissioner in 2009, support for Christian Vélot in France