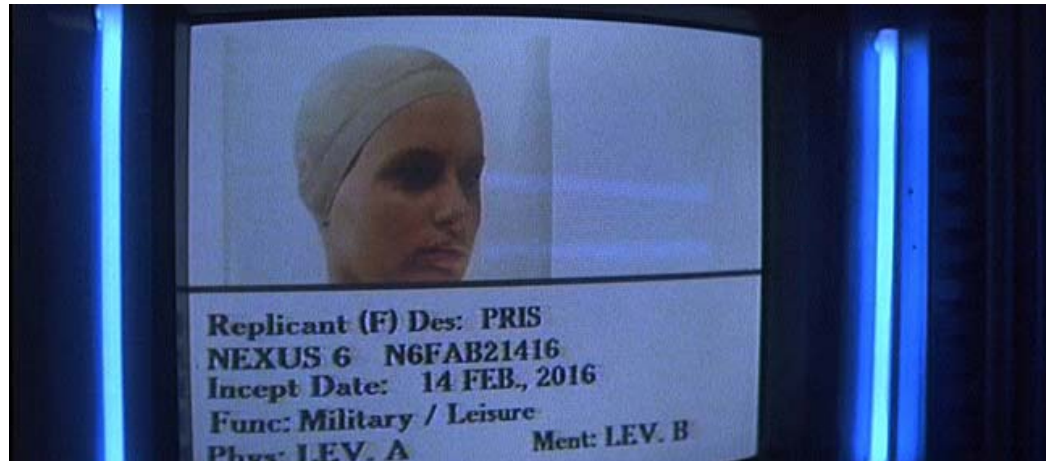

GLOBAL GOVERNANCE OF THE TECHNOLOGICAL REVOLUTION

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INTRODUCTION (1)

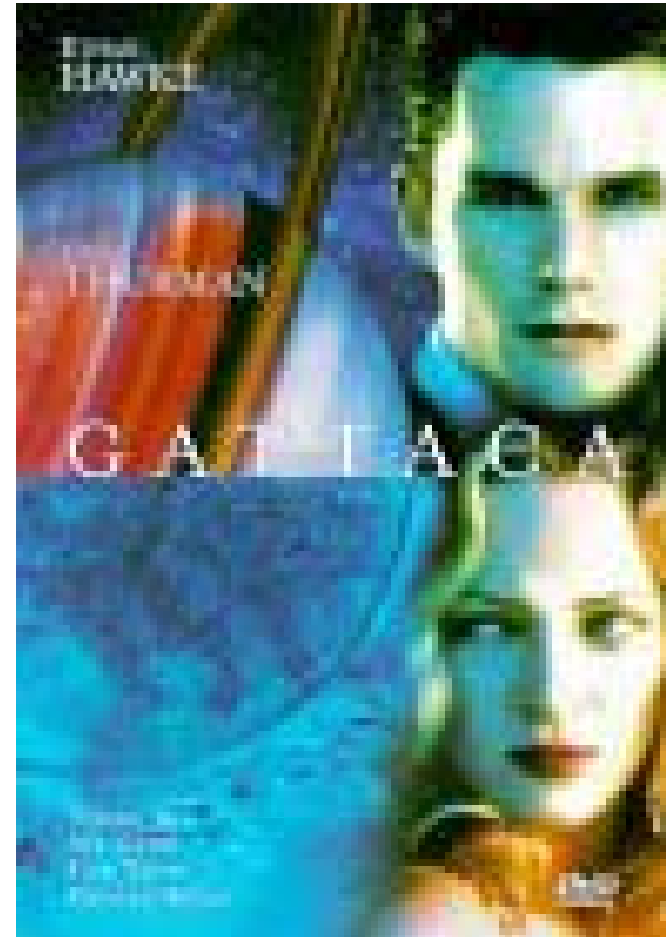


A scene in “Blade Runner”, a 1980s science fiction movie, is set in the headquarters of a prosperous-looking biotechnology company. The firm makes “replicants”, robots that look like humans, and the firm's boss describes how they are grown from a single cell. The replicants are genetically modified people without any legal rights. In this dystopia, it is the unaltered humans who rule.



INTRODUCTION (2)

By contrast, “GATTACA”, another movie set in a genetically modified future, has the modified in charge. They are beautiful, gifted and intelligent. It is those who remain untouched by modification who suffer. All this is in the realm of fiction, but the contrasting views of the potential effects of biotechnology point to an important truth about any technology. What really matters is not what is possible, but what people make of those possibilities.



INTRODUCTION (3)

Technology is the practical application of knowledge to perform some actions, to solve some practical problems, or to achieve some practical goals. While knowledge has always a positive value – at least in liberal, open societies – its practical applications often need to be regulated. Policy makers should obviously be open-minded about these regulations, but be cautious and questioning as well.

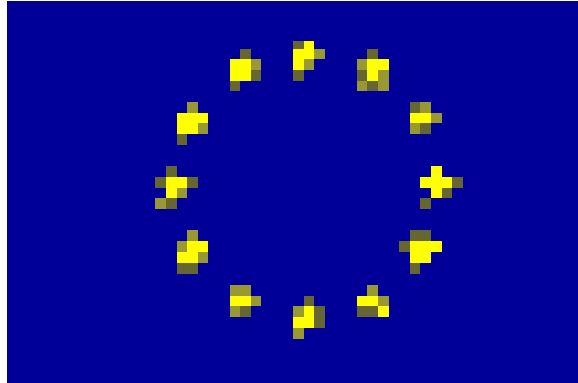


GOVERNANCE (1)

Governance is the effort of human communities to try to control, direct, shape, or regulate certain kinds of activities. The governance approach implies that conventional boundaries between politics, policies and administration become less significant than the question of how the whole ensemble works (or fails to work). In this sense, governance is a broader notion that encompasses and transcends that of government. It is a process of management and control involving several actors, and, specifically, of interaction between formal institutions and those of civil society.



GOVERNANCE (2)



The European Commission's White Paper on European Governance lists five principles which should underpin good governance: openness, participation, accountability, effectiveness and coherence. Ideally, good governance should aim to ensure a high level of participation, and a fair, transparent and effective decision-making and implementation process, contributing to raising the level of confidence. (European Commission, 2001).



TECHNO REVOLUTION (1)

The enormous growth of modern technology over the late 20th century has provided the basis for myriad applications in industry, agriculture, and medicine. Technological revolution coupled with global electronic networks of exchange of capital, knowledge, commodities, and information has created a key feature of the globalisation era: the short circuit between scientific discovery and its technological application.



TECHNO REVOLUTION (2)



Today, the time between new discoveries and their applications has shortened as public opinion and policy makers are often incapable to form a clear picture of what is worth worrying about. They often end up wavering between a naive enthusiasm mixed up with scientific hubris on one side and blind fear of the new on the other. This is why governance of science and technology policy is becoming increasingly important.



TECHNO REVOLUTION (3)

IT and biological technologies are network technologies, they are de-centred, dispersed and disseminated, and their control and use are largely in the hands of the individuals, citizens' groups, and small enterprises.. The governance challenge is no longer democratic control over centralized systems—as it was in the 20th century, with such technologies as nuclear weaponry and energy, telecommunications, pharmaceuticals, medicine, and airlines—but governance over decentralised, distributed systems.



TECHNO REVOLUTION (4)

The current political and legal infrastructures – shaped on “hard” technology - are inadequate for dealing with global changes in IT and biotechnology. There are three main oppositions that characterise post-modern technology: (1) global vs. local, (2) public vs. private, and, (3) use vs. misuse.



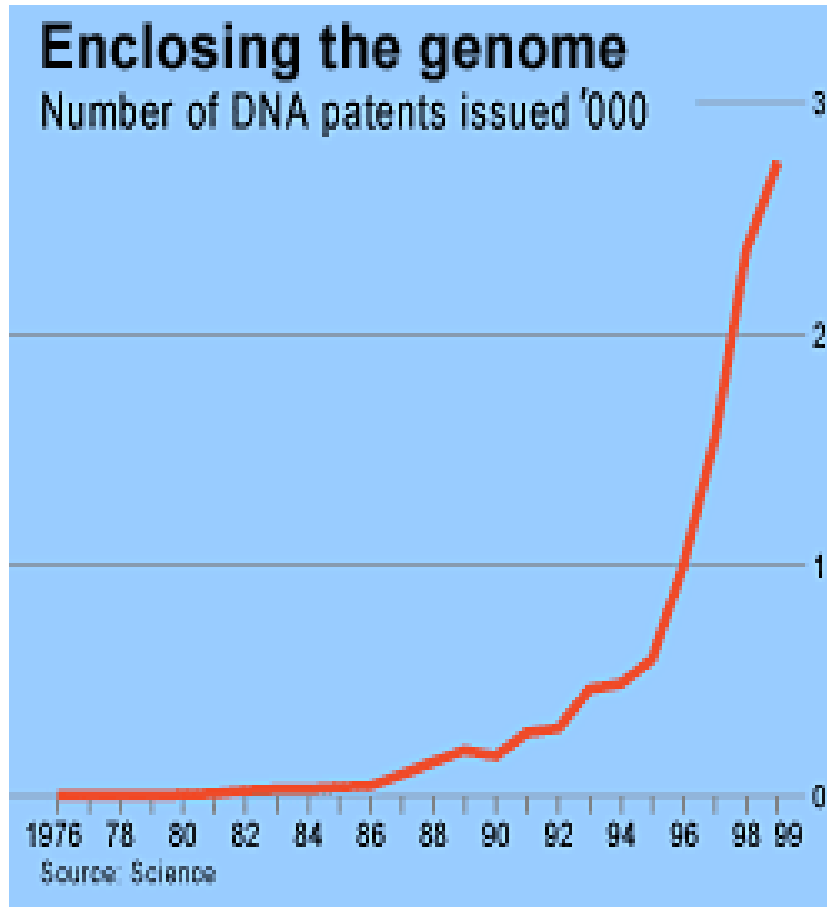
GLOBAL vs. LOCAL (1)



New technologies are inherently “glocal” because they empower individuals and common interest groups. The fact that collective action is not required to use these technologies makes them particularly difficult to be controlled by national governments. New technologies, such as the GRID and evolving intelligent user-oriented computing environments based upon it, hold promises to go further.



GLOBAL vs. LOCAL (2)



Biotechnology is seen as having special promise because it will tailor treatments and medicines to the individual and place emphasis of certain biological controls on processes in the hands of individuals. Industrial biotechnology, coupled with nanotechnology, promises to create completely new products. What is astonishing is that this revolution is happening through networks of small, medium enterprises, often localised in emerging countries.



PRIVATE vs PUBLIC (1)

IT and biotechnology participate in the post-modern tendency of a reduction of public space and regulation, in favour of private, individual or community oriented spheres. The question of the distinction between public and private is likely to be one of the main political issues of tech revolution.



PRIVATE vs PUBLIC (2)



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In the Internet world, it is quite impossible to distinguish seriously between public and private spheres. The two spheres fade and overlap. The Internet has evolved into a global information network and has developed beyond its original purpose of sharing information into a global commercial trading system where everything can be purchased: human cloning, organs to be transplanted, viruses that can be weaponised.



USE vs MISUSE (1)

Dual use technologies are those technologies that can be used both for civil and military purposes. The "dual use" aspect of IT and biotechnology does not only concern a few applications. In principle, all of IT and biotechnology can be used both for civil and military purposes. The features that make these technologies different also make the effects of their abuse potentially greater than those of other technologies.



USE vs MISUSE (2)

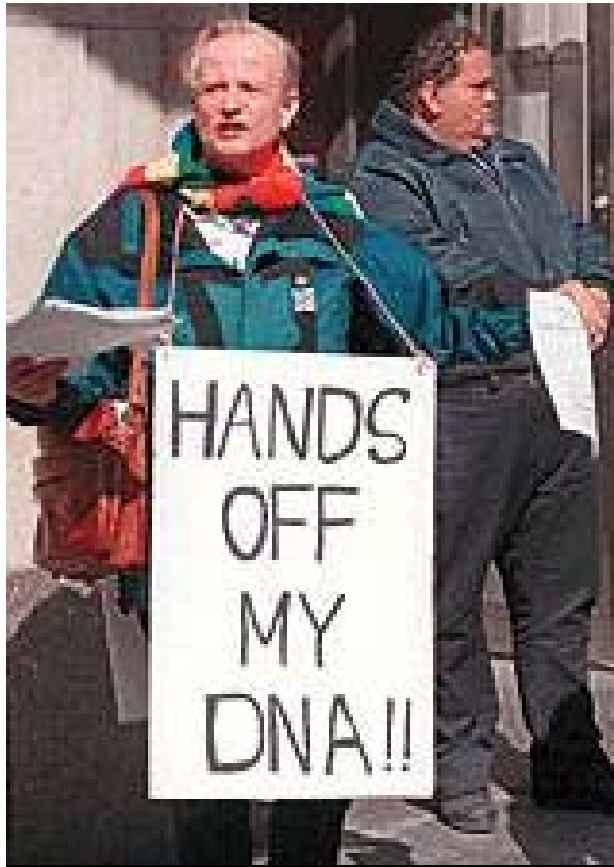
New questions will be raised as biological, material and computer sciences converge. Nano biological sensors detecting chemical and biological information may soon be available that will be capable of providing instant feedback on individual or group activities and, further, of linking this information into ultra-scale networked computing. How can abuses of these technologies, such as surveillance and large-scale information-gathering among the population, be anticipated and regulated or countered? How can terrorist groups, mafia cartels and other “*rogue*” actors on the global stage be prevented to misuse this technology?



Affymetrix via AP



SCIENCE AND POLITICS (1)



One characteristic of post-modern technology is the radical change of the representation, value and status of science. The expression "*techno-science*" emphasises operational ability and productivity, and the interaction of science, technology, economy and politics. The representation of science has changed so much that some people may say that: "doing science is another way for doing politics".



SCIENCE AND POLITICS (2)

Government regulation and private-sector standardisation are highly active in IT and biotechnology arenas, although they have trouble keeping up with the pace of change. According to the old, elitist, model of governance, experts advise policy makers who then take decisions, while common citizens are not at all involved in decision making.



Elitist model

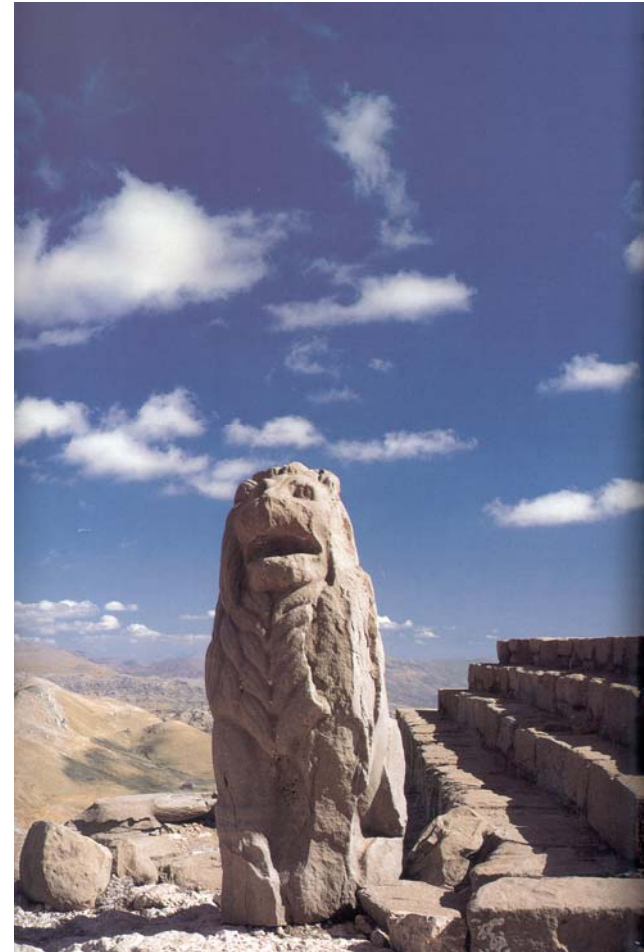
Based on 2 propositions:

- 'Masses' are apathetic and ignorant
- Elites are in strategic power positions, their interests predominate in public policy outcomes. Congruence between mass opinion and public policy outputs is coincidental



Top-down process, based on social divisions

- Few with power make decisions
- Majority – no power > no decisions
- The ‘few’ are not typical
- Maintenance of *status quo*
- Public policy reflects elite values
- Little influence from masses



Implications of elite model for policy analysis

- Public policy does not reflect demands of 'the people' so much as it does interests and values of elites
- Therefore change and innovation come about as a result of redefinitions by elites of own values



New models of governance

It is clear that the evolution of IT and biotechnology itself has been making this old governance model inappropriate and even counterproductive.

First, the increasing importance of the media system makes impracticable any form of elitist debate. Second, it has changed the public and political perception of expertise.



Experts

Expert's knowledge is not available in a timely and readily useful form. Both public and policy makers perceive the scientific community as dispersed and fragmented: experts do not share the same view and any advisory committee ends up reproducing the same divisions that one can find in the society.



SCIENCE AND POLITICS (4)



New governance mechanisms are needed. They should present three main features: (1) Internationality, (2) Pluralism, and, (3) Accountability.



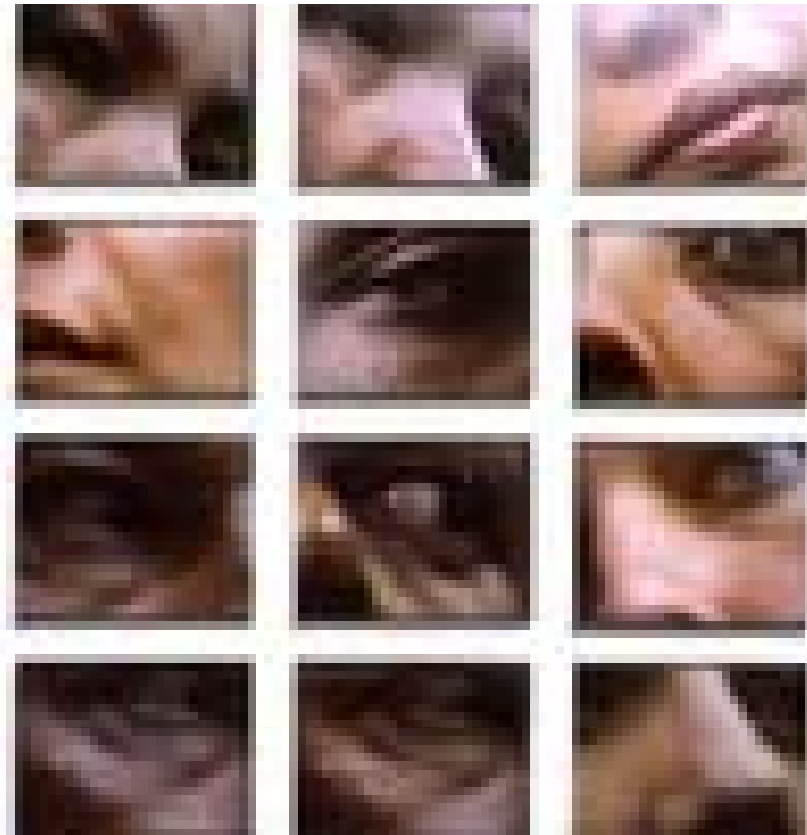
INTERNATIONALITY

Modern information technology is inherently without borders. The Internet user does not care about the physical location of any given server; so it is possible to defeat an effort by one nation or jurisdiction to control or close down a site by moving it to another nation or jurisdiction. Biotechnology is less mobile but still presents many of the same challenges. For example, if one country wants to ban cloning or genetic manipulation of offspring, people who want such things can simply obtain them in another country without such regulations. It is useless, therefore, to think about governance except in an international context.

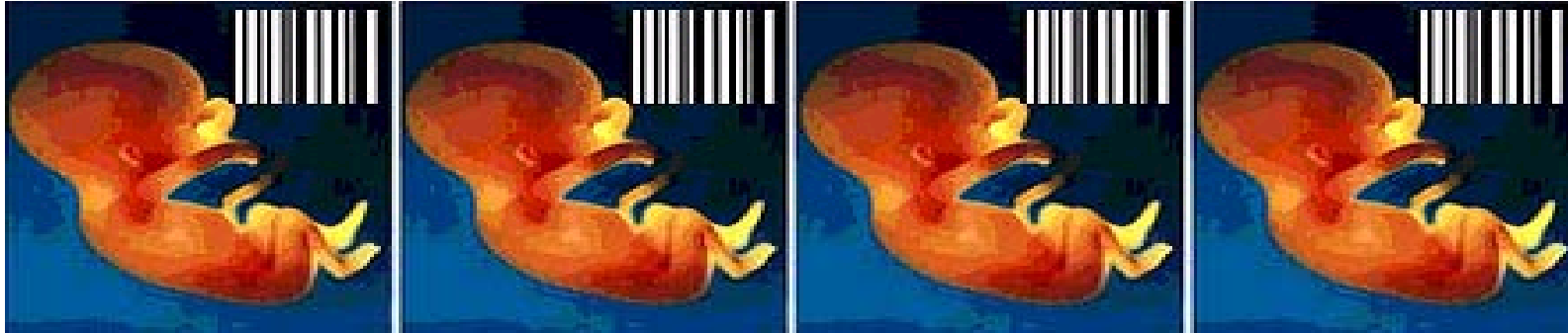


PLURALISM (1)

Decisions can be taken only according a pluralist model that involves a significant number of organisations and users in deciding what technologies to support with research and development funds. In addition, what technologies need governance, what the norms of use and application should be, and whether they should be regulated; and, if so, how, and at what level of formality.



PLURALISM (2)



Researchers and policy makers cannot be the sole actors on the stage. Researchers are under increasing pressure to demonstrate the policy relevance of their findings and to deliver tangible results. In turn, policy-makers are under increasing pressure to justify their choices of technology to be developed and socio-economic goals to be pursued. Thus NGOs, consumers' associations, citizens' panels, should be directly involved.



ACCOUNTABILITY

NGOs, consumers' associations, citizens' panels base their authority primarily on the voluntary choices of their members. Participatory instruments need to be moderated by politics. We need to define accountable, transparent, open and effective procedures that may bring together scientific expertise, technological assessment, democratic representativeness, and policy making.



ACKNOWLEDGEMENTS

- This work was funded by a grant from the European Commission - DG Research – Contract nr QLG6-CT-2002-01796 (Bioethical Implications of Globalisation Processes).



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