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Science, democracy, and the global market

The State is being replaced as regulating agent of public policy by free market forces and private bodies. Controversial areas of the technology sector are resolved by external experts who are often professionals or private entities; media manipulation has become a key element in the control of information about the products of science and technology. The health industry sells technology as the main solution to health problems that could be better addressed by reforms in public health; at the same time, defence expenditure eats into science and technology budgets.

The democratic universe in transformation

Over the course of the last twenty–five years, some of the essential mainstays of democratic society — as formulated and subsequently strengthened in Western societies after the Second World War — have been subtly but consistently transformed. The process has not affected the basic aspects of democracy such as the structure of the State, the parliamentary model of political representation, the freedom of speech, or the separation of powers. Neither has it affected civic movements' capacity to act nor industrial relations between trade unions and employers. Therefore, it is not even a formal structural transformation of the key referents of the welfare state. However, the persistence of the model does not imply that the social dynamics or the core values that sustained democratic society have remained immutable.

One aspect to have transformed more generally is the articulation of the democratic system that some decades ago put the authority of the State and its active function above all else. Democracy represented a system of rewards fundamentally based on social justice, work and merit, the integration of citizens, and social protection. All this shaped a universe of relations around which public policies were articulated over the course of the duration of the welfare state. This model of democracy was developed in the context of a global market ruled by the laws of free trade under the protection of legislative tolerance. It recognized and legitimized, at least in part, national regulations and allowed nations an important degree of autonomy in the management of labour relations.

Throughout the last quarter of the century, the universe of social relations and values summarized above has gradually been substituted by a new *common world*; a new system that has subtly transformed many of the values and explicit or implicit rules that guided and legitimized social relations in the democratic universe. The latter is increasingly being articulated around compromise or individual responsibility. It also promotes the birth of new values such as transparency or efficiency — among the key referents for the

new model. But the progressive marginalization of the State as regulating agent of social relations and guarantor of the common good and the rise in the influence of private agents has generated feelings of insecurity and vulnerability among most citizens. Security and risk have become unavoidable ingredients of the new order.¹

New concepts have gained essential significance: *governance*, for example, has become the cornerstone of the discourse elaborated by governments, economists, academics, businessmen, and international organizations. A new phenomenon underlies the concept: efficient management is the most important thing because *ruling* has become a synonym for *managing a universe of constantly changing relations*.² Good governance prevails as an ideology for optimizing the running of governments, companies, corporations, and trade or humanitarian programmes. According to L. Boltanski and E. Chiapello, *governance* represents a new and powerful "spirit of capitalism", around which new values have been generated and new norms internalized.³

The trend towards the substitution of the State and the concept of public management for the notion of *efficient governance* — mainly by the private enterprise — has begun to have consequences in so many different spheres that it would be impossible to analyze them fully here. I have already mentioned the substitution and denigration of the State and public management; another consequence is the marginalization and discrediting of politics in favour of efficient management. All this points towards the replacement of the State as the main regulating agent of public policies by free market forces and private bodies. Recently, the astonishing rise of patents and property rights for every kind of natural and technological product has become a clear example of the strong tendency towards the increasing privatization of knowledge.⁴

The new context places all power in the efficiency of markets, so that democratic debate, negotiation, and participation stop being core elements of the system. Not only do these lose interest and value, they also become a nuisance, since they imply debate and participation, which can lead to more complex and unpredictable decision-making processes. Dominique Pestre has related the increasing importance of this process to the defeat of the ideal of deliberative democracy formulated at the end of the Cold War by Jürgen Habermas.⁵

The decay of deliberative democracy is occurring while technical knowledge belonging to groups of apparently neutral experts conditioned by clearly identifiable economic and social interests increases. We are witnessing a transformation characterized by the substitution of politics, and dialogue by a technocracy legitimized by the judgement of specialists.⁶ The technocratic character of the new discourse underestimates politics when it argues that politicians are not experts, that they are concerned only with elections, and that they manipulate democracy in their own favour.

This process is speeding up at a very delicate moment: we have entered the era of the global market where decision-making depends on a broad range of logics that go beyond the exchange of arguments and national regulations. The State's political sphere is losing its importance because economic actors have an increasingly essential role in the process of production, innovation, and commerce; that is to say, in the economy of knowledge and the production of wealth. More and more, major decisions are made independently of the State; in other words, decisions depend directly on the logic of international markets.

The main actors of the world economy have become meta-powers whose strength lies in the ability to create and produce knowledge and goods, and in the ability to invest wherever they consider appropriate, ignoring countries that do not favour or that obstruct their interests.⁷

At this point, it should be recalled that economic meta-powers are not democratically legitimized by classical forms of representation but by management agencies such as central banks, boards of directors, or executive committees. Furthermore, new management agencies are subjected to regulations that introduce voluntary codes of ethics against competition and other practices, ultimately reducing internal policy and working and decision-making mechanisms to the public demonstration of formal good manners. When this system provokes a conflict of interests or an infringement of regulations, the case is solved by the law courts.

Techno-science between industry and public policy

Techno-science occupies a central position in the production of knowledge and wealth in post-industrial societies.⁸ To what extent is the State authorized to legislate over the technology industry and scientific research? To what degree can the political sphere of the State continue to be the place for democratic debate about the products — material or intellectual — of techno-science? To what degree can the State influence decision making and the regulation of the logic of industry? Should we assume that every trade is justified *a priori*, or can it be limited if it affects the essential aspects of society, public values, and social ethics? This prominent tendency avoids political interference except in aspects that directly affect morality or religion, such as human cloning, experimentation with living creatures, organ trading, and euthanasia.⁹

The new technocratic order of experts in the service of free trade shows a tendency to simplify or even avoid tensions and conflicts that are inseparable from democracy — which are, in short, the expression of plurality and the basis of the search for solutions that take into account the common good. Almost everything in the field of science and technology affects society, involves ethical aspects, and has an effect on the environment — this is why the impact of this field is necessarily problematic. Nevertheless, the ability exhibited by the new order to absorb criticism and reformulate critical arguments in its favour is astonishing. The way the term *sustainable development*, first used critically with respect to predatory development that destroys natural resources, has been incorporated into the neo-liberal argument is a well-known example; sustainable development has become another business for an emerging environmental industry.¹⁰

The techno-scientific industry is gaining more and more economic and financial power — consider the computer, energy, or health industries — and becoming the most paradigmatic representation of real power. During the Cold War, the system of creation, application, and dissemination of knowledge formed a well-regulated link between experts, public agencies, magnates, and companies. Nowadays, procedures of evaluation generally elude the ambit of the State or public sphere. Laws may be very strict, but controversial areas of the techno-industry tend to be resolved by external experts who are often professionals or private entities. Controversial areas include the testing of pharmaceuticals, the techno-biology applied to *in vitro* fertilization and the culture of embryonic cells, the effects of working conditions on health, and the exposure to waves produced by mobile phones or high-voltage cables. It is

easy to understand, then, that any form of clearly unprofitable knowledge or technical advance is excluded from the prevailing situation. Likewise, it is very difficult to challenge everything that, despite being profitable, runs counter to the interests of the economic meta-powers.

Media manipulation and the control of information

Media manipulation, sometimes crude and sometimes subtle, has become a key element in the control of information about the products of science, technology, and industry.¹¹ The big trusts in the techno-science industry are completely embedded in the world of communication; when they see their interests endangered, they run campaigns to discredit their rivals.

Such a campaign was orchestrated against the German doctor Matthias Rath regarding the treatment of Aids in South Africa. Rath was portrayed as a liar and a conman because of his opposition to the use of antiretroviral drugs and his defence of a natural therapy based on a strict diet and a preparation of minerals and vitamins. He was accused of inconsistency in the clinical research that supported his therapy. The fact that he is a millionaire was used against him; he was portrayed as a madman, a skilful propagandist, and accused of feathering his own nest by selling his products on the Internet. But Rath had published his ideas in *The New York Times*, the *International Herald Tribune*, and in the *Journal of the American Medical Association*, the organ of the leading professional association of American doctors. Among the arguments Rath presented to support "cellular medicine" were studies by the Harvard School of Public Health that credited the beneficial effects of vitamin treatment in slowing down the development of Aids in those infected by HIV.

Rath's campaign to spread his therapy in South Africa as an alternative to antiretroviral drugs sparked off heated controversy. The indignation of civic associations such as the Treatment Action Campaign, which has fought for many years for the reduction of the price of the antiretroviral drugs and against the interests of the pharmaceutical industry, was added to outrage from the professional medical sector and non-governmental health organizations. The controversy generated confusion, stirred up by the South African government's ambivalent attitude. Marketing and media manipulation were factors of prime importance.

The Rath case reveals something more dangerous than mere debate between opposing therapeutic approaches, namely the ability of the media and circles of economic power to build up and destroy truths and people, and the preponderance of mercantile reason over the universal right to health and its disregard for the laws of science. Underlying the issue is a shadowy realm of informational manipulation and suspicious disqualification. In the background, one cannot help seeing the interests of multinationals that monopolize the production and sale of pharmaceuticals, encourage consumption to irrational extents, dominate health research, and tailor information to commercial interests. The seriousness of the matter lies in the fact that we are talking about human health: at stake here is the life and death of human beings. Did the Western world not create the myth of the universality of rights? Will it not fight to defend these rights, and for a science that serves rationality and common good?

The Rath case would be just another example of the many conflicts between commercial interests and health, were it not that simultaneously a number of explosive statements by the British doctor Richard Smith appeared in the

medical journal *Plos Medicine*. Smith had just resigned from the post of editor of one of the most prestigious journals of the world, the *British Medical Journal*, which he had held for almost fifteen years, and immediately denounced a very serious situation: that medical publications have become, in his words, "an extension of the marketing department of the pharmaceutical industry". Later, as representative of United Health Europe — a consultancy of the British Public Health Department and other institutions related to the sphere of public health — Smith stated, with evidence, that the pharmaceutical industry obtains the results that it wants via clinical trials. Smith's evidence suggested that a clinical trial financed by the company producing the drug being tested is four times more likely to be successful than if it was financed by another source. "All companies tend to obtain the results they want [...] It is not that they are perverse, but that they are very skilful", asserted Smith in a public statement in which he described strategies for inclining research results towards the interests of companies and for bombarding public opinion with aggressive advertising and marketing campaigns. Smith's appearance was intended as an attempt to retrieve research related to human health for the public sector, and to publish results not in specialized journals but on web pages regulated by public institutions.¹²

Smith's opinion deserves special consideration because it is based on extensive experience in the world of scientific communication that corroborates the citizen's belief that there is great media pressure around the health industry, the consumption of medicines, and health technologies. A minimum of critical analysis of reports and advertisements published in the science, technology, and health supplements of newspapers shows that they not only provide partial and self-interested news, but also generate disproportionate expectations regarding the future of regenerative medicine, the treatment of degenerative diseases, or the efficiency of drugs. Here, the sole aim is to encourage consumption and guarantee private and public resources.

The extent of manipulation of information about issues relating to health technologies reaches levels that exceed the minimum standards of informational truthfulness and public ethics. In order to control pressure from the industry and its capacity to manipulate public opinion, one should be optimistic and trust, as Richard Smith, in the future of public research regulated by international standards.¹³ On the other hand, maybe one should retain the scepticism of director Nani Moretti in his film *Caro diario*; when, suffering Hodgkin's lymphoma, and having consulted a wide range of specialists and taken all kinds of medicines, the protagonist arrives at the unavoidable truth that a glass of water is good for the health.

Whether optimistic or sceptical, nobody can deny that when fighting Aids the first step is prevention, and that this prevention has nothing to do with technological reason. Instead, the two mainstays of prevention have a social dimension, because they lie in immunity — which depends on hygiene, food, and a decent life — and in practising safe sex (for example, using condoms). If these measures were efficient, they would radically reduce the demand for antiretroviral drugs, which should never be the core of the global battle against the disease, but a means to relieve the situation of sick people. This plan could be applied to many other diseases. The health industry sells technology as the main solution to health problems that have a less lucrative, although possibly more efficient, preventive referent in public health, diet, and hygiene. But underlying these problems are nations and poverty, both anathema for market logic, which tends to degrade citizenship to the relationship between patient and consumer.

The business of vaccines

Not so long ago, a press release explained that an American shipping company had started an unusually lucrative business: for the reasonable price of one hundred dollars, it transferred American citizens to Vancouver, where they were provided with flu vaccines. Every autumn, the threat of epidemic increases demand and exhausts resources. Many Americans therefore decide to cross the border to Canada to receive the vaccine.

At around the same time, Dr. Pedro Alonso appeared in the headlines because of an article he published in the *The Lancet*, in which he drew attention to the positive results of trials for a malaria vaccine. The research was funded by the Malaria Vaccine Initiative and promoted by the Bill and Melinda Gates Foundation, the pharmaceutical company Glaxo–Smith–Kline (which has developed an experimental vaccine), the Spanish government (which has supported a trial in Mozambique), and the Hospital Clínic of Barcelona (where Alonso runs an International Health Centre). Malaria kills between one and three million people every year, most of them African children under five years old; five hundred million people contract malaria, representing one in twelve people throughout the world. Malaria is the paradigm of the relentless circle that associates disease with poverty: poor people become ill because they are poor, and they continue to be poor because they become ill.

Even today, the cycle of malnutrition–infection causes the shocking death of twelve million children every year. Reports made by the World Bank in 1993 and by the WHO in 1995 pointed out that diseases such as malaria, as well as child deaths caused by diarrhoea and malnutrition, could easily be prevented. The average infant death due to contagious disease is so enormous that in its report of 1993 Unicef considered the most necessary medical action regarding infancy in the Third World to be immunization against measles. While in Sweden the proportion of children vaccinated was 95 per cent, in Ethiopia it was not even 17 per cent. Such data leads to the conclusion that the important problems of public health affecting the world, and specifically poor countries, have an easy scientific–technical solution, one disturbed only by the political and economic dimensions. Disease becomes the common factor in food shortages, hygiene, housing, and, generally, individual and group health.

Reducing mortality and preventable deaths implies broadening immunization programmes, which are nowadays one of the most efficient technologies against many of the problems related to the disease–poverty pairing. The eradication of poliomyelitis on the American continent in the last decade and the great progress made in controlling the disease throughout the world has raised expectation that the poliomyelitis might join the list of eradicated diseases in the near future, as has been the case with smallpox. For that reason, the main and most direct resolve of the World Health Organization in the first years of the twenty–first century has been to reduce the rates of contagious diseases and suffering from illnesses such as malaria, Aids, or tuberculosis. But access to new health technologies, campaigns for mass vaccination, and certain medicines introduces serious financing problems that exclude large areas of the world.

The market logic states that only the 10 per cent of resources invested in biomedical research are devoted to relieving health problems affecting 90 per cent of the world's population — a statistic condemned by the Global Forum for Health Research. Market dynamics heavily reinforce the vicious cycle between disease and poverty. According to current estimates, malaria has an

economic cost in sub-Saharan Africa equivalent to 5.8 per cent and Aids 11.7 per cent of the GDP of that region; these, together with other diseases such as tuberculosis, food infections, or death during childbirth represent such astonishing figures that the consolidation of a situation of economic growth becomes very difficult. Many health problems could be mitigated with public health measures, cheap vaccines, and possibly other more expensive drugs that could be supplied on the basis of an international compromise that transcended mere market logic.

Health research occupies a significant part of the pages of daily newspapers, and the support for complex programmes of biotechnology — whose spectacular nature astonishes and gives hope to the public in industrialized countries — raises interesting discussions. In this context, it is advisable not to lose sight of the devastating panorama of the world health system. It will not be possible to alter the current tendency unless a health logic of human rights supersedes the economic rationality of large companies.

Scientific research and weapons industry

The creation of the Ministry of Science and Technology in Spain during the second term of office of the Partido Popular (PP) was, in terms of science policy, one of the most disappointing political initiatives of recent years. A significant part of the disappointment derives from the absence of a political project to promote public scientific-technological research, and instead strategies for privatization and the management of state cooperation with businesses, including telephone companies and the electricity and energy industries. The nonsense reached new heights when investment in weapons technology — euphemistically qualified as "military research" — was included in the scientific research budget. The initiative represented a hypocritical scheme to raise military costs at the expense of investments destined for the composition of a public system of research, development, and innovation. The situation is not unique to Spain, but occurs worldwide.¹⁴

The system of science and technology in Spain, both public and private, is very feeble when seen in international comparison; to a great extent this is due to the fact that the private sector barely contributes resources, while state investments in science and technology are way below average for OECD countries. In this context, it is understandable that the enormous resources put into military expenditure some years ago caused a protest movement at the core of the Spanish scientific community. Thousands of professors, scientists, and researchers declared themselves opposed to military expenditure — which represents around 30 per cent of the national research budget — being passed off as scientific research. The PP wanted to carry on this tendency from the previous government, under the pretext that "society also benefits from innovations in military technology". The position of the current socialist government is different, although in the last two years the situation has hardly changed.¹⁵

A significant section of the Spanish scientific community that works in the research centres of the Consejo Superior de Investigaciones Científicas (CSIC), the universities, and other research institutions has been involved in the campaign "For peace: no to military research!", which includes the scientific objection to research for military purposes. The "science for peace" movement has also contributed to the statutory commitment of many universities, such as Valencia, to peace and civil rights, and against militarism.

The *Manifesto for peace research and development* has condemned the fact that 65 per cent of investments in 2003 in military programmes (the Eurofighter, frigates F-100, Leopard tanks, and A-400M aeroplanes) came out of the funds of the Ministry of Science and Technology. At the end of 2003, the cabinet passed a plan to acquire armaments totalling EUR 4176 million, including 24 helicopters, four submarines, 212 tanks and a warship, funded by the Ministry of Science and Technology and by selling military land.

According to the report made by the Foundation for Peace,¹⁶ the national budget in 2004 assigned EUR 1371 million to military expenses, which made up more than 31 per cent of the total budget for scientific research and development. This figure is three times that devoted to basic scientific research, the main funding source of the CSIC and the universities; seven times the budget devoted to public health research; 27 times the budget for agricultural research; and 38 times the budget devoted to oceanographic and fisheries research. It seemed that under the conservative government, the weapons industry was on its way to becoming the central sphere of research in Spain. The main destination of funds was the design of eleven types of armament, meaning that a mere five companies linked to the weapons industry (EADS-CASA, Santa Bárbara Sistemas, SENER, Izar, and ITP) monopolized more funding than that received by the Spanish university system and the CSICAS as a whole.

In the international context of public scientific research, the facts presented above deserve sarcasm. The scientific policies carried out by consecutive Spanish governments since the beginning of the 1990s are a farce. According to data contained in a report by the Foundation for Peace, total investment in science and technology in Spain represented 0.96 per cent of the GDP in 2003; the European average was 1.9 per cent. Under the PP government, public funding for research and development in the weapons industry was increased eightfold. If we deduct from the research and development budget funds devoted to the fabrication of military equipment, real investment in research and development were 0.75 per cent of the GDP, putting Spain at the bottom of the EU member states. Despite official propaganda, this is our position. If we are to believe the conclusions of a report by the CSIC, it will take fifty years for Spain to reach the average scientific level of the OECD and one hundred years to achieve the goal of 3 per cent of the GDP that EU member states set as a target for 2010.

Conclusion

The transformation currently affecting the democratic system and the new forms of decision making in international relations, together with the increasing importance of the techno-scientific industry within the media universe, suggests a complex panorama with unparalleled risks and possibilities. The gradual alienation of the State as a regulating agent, along with spaces for debate and political representation, is part of the tendency to pass over political and financial control in favour of commercial dynamics and the logic of economic-military power. As a result, democratic regulation and the common good lose importance as supreme values and are displaced by the predominance of the production-consumption complex. The process of privatization of knowledge and the products of science and technology is one of the main threats to democracy, one that should provoke worldwide reaction from citizens and civic movements. Public debate must be re-initiated as the starting point for criticism of the harm caused by the *governance* of industry that is gradually being generated around knowledge, industrial products,

nature, and the environment. It is becoming increasingly urgent to analyze and regulate with universal criteria the power structures hidden behind the food and agriculture, health and environment, energy, and armaments industries. If international public opinion and spaces of debate and public participation (state, civic, and non-governmental) do not react in the near future, we will be witness to the unpunished violation of human rights and to their transformation into an anachronism of utopian democracy.

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