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Maastricht University, Department on Technology and Society
Science and Research Centre of Koper, University of Primorska
Fundación General Universidad de la Rioja
University of Aarhus, The Danish Centre for Studies in Research and Research Policy

Seminar

SOCIAL SCIENCES FOR THE SCIENTIFIC AND TECHNOLOGICAL ADVANCEMENT

Dialogue on governance and development policies of the European Research Area

Brussels, October 16, 2007

Contribution of

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Introduction

The question at the heart of our seminar – the contribution of social sciences to the advancement of scientific and technological research – opens up different paths of thought and reflection, partially not yet explored.

Although, at first glance, everyone could share the idea that social sciences could make a significant contribution to scientific and technological research, many – even among the so-called "insiders" – may have some difficulty in specifying the **nature** of this contribution, **how it is significant** and in what way it could be **used** and **improved**.

These questions must not be taken for granted and, perhaps, we are not giving them the attention they deserve.

Precisely for taking some steps forward in this direction, a network of six European social research institutions – the Danish Center for Studies in Research and Research Policy of the University of Aarhus, the University of Maastricht, Laboratorio di Scienze della Cittadinanza, the Primorska University of Koper, the La Rioja University of La Coruña, under the coordination of the Tor Vergata University of Rome – is carrying out the project ***"Social Sciences and European Research Capacities (SS-ERC)"***, financed under the Sixth Framework Programme.

The project is still underway; however, some provisional results have already been produced.

Contextual elements

First of all, I believe that it could be useful to dwell upon the context within which these questions arise. As everyone knows, this context is complex and in rapid development. To be brief, I will only mention **four contextual elements** which seem to be particularly relevant.

a. Knowledge society

Obviously, the first element to be taken into account is the shift towards the so-called "knowledge society", an expression largely used for referring to an **overall transformation** of contemporary societies, characterised by

social fragmentation, the increasing subjectivity and autonomy of individuals, and the growing weight of knowledge and cognitive dynamics.

In the face of all these phenomena, **all the structures of "modernity**" – State structures, public administrations, political systems, welfare systems, etc. – have reached a crisis point, exposing themselves to strong changes. These structures also include scientific and technological research.

b. Ways of producing science and technology

This leads us to the second **contextual element**, i.e. the changes affecting the specific social institution called "scientific and technological research". Social researchers have largely documented these changes (we can mention here, as examples, models such as the New Production of Knowledge or the Triple Helix), which are broad and deep, such as the increasing trans-disciplinarity, the increasing involvement of new actors in the research activities, the competitive access to research funds, the impact of ICTs on research or the increasing difficulty in distinguishing between science and technology or between fundamental research and application research. Their overall effect has been a huge increase in the significance of social dynamics embedded in S&T as well as the strengthening of the science-society co-evolutionary links.

c. The European Research Area

The third contextual element is necessarily that of the construction of the ***European Research Area***, i.e. of a unitary European research system having a critical mass allowing it to be competitive at a global level and to effectively support the so-called "Lisbon Strategy". This effort has already had important effects, and mainly the increase in funds allocated to research (through the Seventh Framework Programme) and a stronger planning of European research. However, there are also large transformations to be promoted, such as harmonising the national research systems, strengthening the European research networks, facilitating the progressive convergence of national research policies and, probably, building up a "culture of science and technology" shared by all European citizens.

d. What is at stake

These three processes give us the "geographical co-ordinates" for a better understanding of **what is at stake** today as regards S&T.

As stressed in some documents of the European Union, science and technology are becoming the "**fuel of the future-generating machinery"** and they are increasingly influencing the "**social fates**" of local and national groups, not only as regards economic competitiveness, but also as regards the cultural and technical capacity to manage and guide increasingly complex societies.

The problem is that the ways in which science and technology are produced are rapidly changing within societies which, in turn, are changing, too, at the same pace. Therefore, there is no longer a **system of "fixed stars" to refer to**, and many still prevailing ideas and representations on science and technology are not only wrong, but even potentially misleading.

The socialisation of S&T

In order to cope with this complex weave of phenomena, in the framework of the SS-ERC an effort is made to build a specific analytical perspective, revolving around the notion of **S&T "socialisation"**.

This concept refers to any orientation, act, action, measure or phenomenon (of a widespread, collective, organisational or political social nature) which, whether intentionally or not, leads to recognising, interpreting and dealing with the social elements involved in S&T and thus allows intervening on research as such.

Without **adequate socialisation processes**, S&T risk being alien to social life, being isolated somehow or simply being ignored by important sectors of society as well as by a great many political, economic and cultural leaders; and at a time when the "**quantum" of socialisation** needed for research is tending to increase rapidly.

For the way things stand, a poorly socialised science is not a science that works all the same except that its results are not adequately "socialised" for the benefit of society, but a **science that simply does not**

work at all and that is thus destined to decrease as regards the intrinsic quality or significance of results.

The areas of socialisation

Obviously, the socialisation perspective is not the only one which can be adopted. However, it has the advantage of "**putting together**" phenomena which are often different in nature and usually dealt with in different disciplinary frames.

The study has allowed us to define a first "state of the situation" of S&T socialisation, on the basis of information gathering carried out through interviews and focus groups and the creation of two databases, one including 217 European social research institutions whose primary mission is conducting social research activities on S&T, and the other containing 264 research issues connected with S&T dealt with by the various social sciences.

The research shows many signs of S&T "hyposocialisation" as well as many factors hindering socialisation which are active, to varying extent, in all the countries considered in the study (Denmark, Italy, the Netherlands, Slovenia and Spain). Some of them are known, others less so. I can mention here, as examples:

- The low appeal of science faculties among young people and their families.
- The increasing obstacles to access and to careers on the part of young people.
- The decreasing status of researchers (in terms of salary, occupational aspects and so on).
- The scant attention devoted to S&T by many sectors of public administration, political leaderships, trade unions and enterprises.
- The bureaucratic and routine ways of managing many public research institutions.
- The persisting forms of discrimination of women in scientific careers.
- The low interest shown by many researchers towards the social and economic value of their own research.
- The poor legitimisation of science among citizens and in key sectors of society (such as among policymakers).

In order to cope with and theoretically handle this broad spectrum of phenomena, in the framework of the SS-ERC project an **overall model of socialisation** is being tested. This model distinguishes six areas of socialisation.

- **Scientific practices,** i.e. the set of human and social elements (relational, economic, political, psychological ones and so on) inevitably present in scientific practice.

- **Scientific mediation,** i.e. the set of activities linking scientific and technological research to different social "micro-environments" within which it is produced, such as the management of research institutes or projects, the design activities for accessing research funding, or the professional dynamics affecting careers in science.

- **Scientific communication,** including the communication involved in science and technology production, the one linked to the valorisation of research and the one geared to constructing and disseminating a generalised scientific culture.

- **Evaluation** of all the aspects directly or indirectly linked to science and technology.

- **Innovation**, i.e. every kind of impact of an economic, social or cultural nature linked to science and technology.

- **Research governance**, in a broad sense, including the activities and measures aimed at supporting and managing the participation of civil society and citizens in decision-making concerning science and technology.

Social sciences and S&T

This is perhaps the starting point for discussing the issue at the heart of the seminar.

If the situation is the one I have just described, then the contribution of social sciences could be **extremely significant** in order to identify, support and provide guidance to S&T socialisation processes and to countervail the tendencies to hypo-socialisation.

Through the study, an effort was made to obtain information on the dynamics of social sciences working on S&T. Three main elements can be discussed here.

a. The growth of social studies on science and technology

The first element is that **social studies on science and technology are evidently on the rise**.

This is borne out by the fact that, for example, half the 217 social research institutes specialising in S&T examined within the SS-ERC project were founded in the last 10 years, and **one out of four in the last five years**.

It is also worth mentioning that the relative weight of publications in social sciences devoted to S&T increased in the period between 1975 and 2005:

- 37 times as regards management sciences;
- about 34 times in psychology and anthropology;
- almost 20 times for economics;
- about 7 times for sociology.

b. The uses of social sciences

A second element concerns the **uses of social sciences in the study of science and technology.** The research found four kinds of uses:

- an **interpretative** use (social sciences interpret S&T and the relations between science and society);
- a **functional** use (social sciences provide useful tools and knowledge for handling, steering, measuring and orienting S&T);
- a **substantive** use (social sciences cooperate with natural sciences on common research programmes);
- a **practical** use (social scientists have roles of a professional nature concerning such aspects as the communication of science, research management or the mediation of conflicts on technologies).

Social sciences tend to move in the direction of an **interpretative use** (either of the research system or of the relations between science and society). The **functional** use appears to be in the minority, while the **substantive** use seems to be very marginal, as is (fortunately, we could say) the **practical** one.

c. The limited penetration of social knowledge on S&T

The third element is the **scant penetration** of the knowledge produced on S&T by social sciences among the research actors (scientists, policymakers, Technology Transfer Offices, etc.). Moreover, the opportunities for **real cooperation** between social researchers and natural sciences are very limited.

This situation is due to a broad set of hindering factors, of a political, cultural, social or organisational nature (the study recorded 25 families of factors hindering S&T socialisation). Among them, it is worth mentioning a sort of **distrust** in social sciences, often viewed as unable to provide reliable forecasts, scarcely oriented to problem-solving and poorly permeated with a "scientific culture".

Lines of solution

These elements show the complexity of the situation, at least when this is examined through the lens of socialisation.

At present, it is difficult to identify any clearcut lines of solution. Nevertheless, taking into account what is emerging from the SS-ERC project, it seems important to move on at least **two different interlinked fronts**.

a. Technological responsibility

The first front is that of expanding and strengthening a widespread "**technological responsibility**", meant as a conscious commitment to supporting scientific and technological research, exploiting its results and steering it; a commitment to be shared primarily by the very researchers, research institutions and innovation agencies, but also by the many sectors

of society holding, sometimes unwittingly, a stake in science and technology.

The aim could be that of enabling each actor to "**do his/her part**" to make the research proceed, recognising them a set of rights with respect to S&T but also a set of duties and, specifically, of responsibilities. This is not an "ethical" question but rather a technical one: without an enlargement of technological responsibility, it becomes difficult to establish highly socialised "regimes" of S&T able to cope with the challenges of the knowledge society.

The question of a generalised "**scientific citizenship**", mostly still to be established, must also be included within this framework.

b. The relationships between social sciences and natural sciences

The second front is that of the **relationships between social sciences and natural sciences**.

As we said, the study shows how scarce the relations are between social researchers and natural scientists, who continue to move within different "circuits". Therefore, there is an increasing need for a "**pact**" between social sciences and natural sciences which could be based on a common awareness, not only on the importance of research in today's society, but also on the possible risks science is exposed to.

For a long time, they opposed each other, sometimes mutually rejecting and often mutually ignoring one another. The linguistic and cultural barriers hindering the dialogue are many. Nevertheless, in the knowledge society, social researchers and natural scientists are part of a "**single scientific field**", characterised by a growing need for integrating knowledge produced in disciplinary sectors even very far apart.

It may be difficult; nonetheless, this is an **unavoidable step** to take towards a more effective and strategic handling of that vital social undertaking called "science".