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Author(s): Ivar Bleiklie and Haldor Byrkjeflot

Source: *Higher Education*, Vol. 44, No. 3/4, Higher Education and its Clients: Institutional Responses to Changes in Demand and in Environment (Oct. - Dec., 2002), pp. 519-532

Published by: Springer

Stable URL: <http://www.jstor.org/stable/3447501>

Accessed: 18/02/2009 19:06

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Changing knowledge regimes: Universities in a new research environment

IVAR BLEIKLIE & HALDOR BYRKJEFLØT

The Rokkan Centre for Social Studies Rosenbergsgate 39, N-5015 Bergen, Norway (E-mail: ivar.bleiklie@rokkauib.no; haldor.byrkjeflot@rokkauib.no)

Abstract. This paper takes an apparent *knowledge paradox* as its point of departure. ‘Knowledge’ has acquired a more all encompassing meaning today, yet this has not strengthened the support for and confidence in higher education institutions. On the contrary, it is often claimed that they have outlived their usefulness. In trying to understand the development behind this paradox, we deal with three issues. We discuss first *the widening concept of knowledge* and the claim that there is emerging a new mode of knowledge production. Secondly the widening concept of knowledge is put into a social and political context, where massification and its social implications are discussed. Thirdly we develop a theoretical framework based on the concept of *knowledge regimes*. In this part we discuss how the concept of knowledge regimes and the related concepts of *knowledge interests* and *knowledge alliances* may be helpful in understanding the complexities and ambiguity of higher education development. Finally we discuss some implications regarding knowledge’s role in social development. We question the assumption that there is a necessary relationship between a widening concept of knowledge and a given form of knowledge development.

Keywords: comparative higher education policy, globalization, higher education institutions, institutional change, knowledge production, research

Introduction

There is a general consensus that ‘knowledge’ has acquired a more all-encompassing meaning today. Although this might be expected to imply strong support for and confidence in higher education institutions, this does not seem to be the case. On the contrary, it is often claimed that they have outlived their usefulness. This apparent *knowledge paradox* may be explained by considering the more utility-oriented conception of knowledge that is gaining ground.

In trying to understand the development behind this paradox, the paper shall deal with three issues. It discusses first *the widening concept of knowledge* and its implications. We discuss the claim that there is emerging a new mode of knowledge production and ask to what extent the new concept of

knowledge is new, whether it is universal and to what aspect of knowledge production it applies.

Secondly the widening concept of knowledge is put into a social and political context, where massification and its social implications are discussed. Higher education growth makes also an important backdrop for a more forceful and active presence of the state in higher education policy and management of the higher education system.

Thirdly the paper develops a theoretical framework based on the concept of *knowledge regimes*.¹ The development described initially, can be seen as the outcome of the struggle to define the true nature of knowledge between actors such as states and politicians, institutional leaders and students, researchers and intellectuals, consultants and business leaders. *Knowledge interests* are therefore the key, together with the linked concepts of *knowledge alliances* and *knowledge regimes*. The paper discusses how these concepts may be helpful in understanding the complexities and ambiguity of higher education development. The paper finally discusses some implications regarding knowledge's role in social development. It questions the assumption that there is a necessary relationship between a widening concept of knowledge and a given form of knowledge development.

The widening concept of knowledge and its implications

Gibbons et al. (1994) have given one of the most sweeping and widely known statements about the widening concept of knowledge in their book *The New Production of Knowledge*. They argue that a new form of knowledge production, "... a distinct set of cognitive and social practices is beginning to emerge" (Gibbons et al. 1994, p. 3). This set of cognitive practices is what they call 'Mode 2' knowledge production. Mode 2 can be distinguished from Mode 1 by being: carried out in a context of application as opposed to a context governed by a specific academic community; transdisciplinary as opposed to disciplinary; heterogeneous as opposed to homogeneous; heterarchical and transient as opposed to hierarchical and stable. Compared to Mode 1, Mode 2 is "... more socially accountable and reflexive. It includes a wider, more temporary and heterogeneous set of practitioners, collaborating on a problem defined in specific and localised context" (Gibbons et al. 1994, p. 3).

From a critical point of view one may ask at least three questions about this statement: 1) To what extent is the new Mode of knowledge production new? 2) To what extent is the movement towards Mode 2 universal across disciplines? 3) To what aspect (if any) of knowledge production – ideology

and justification, institutionalization and organization, social and scientific practices – does it apply?

In order to answer these questions we believe one needs to take one step back and address the concept of knowledge itself. In particular we need to look into what is meant by ‘scientific knowledge’, which is what the universities and other higher education institutions have as their mission to produce and transmit. Because the concept of knowledge is vague and ambiguous, definitions of the concept tend to vary according to what aspect of knowledge is emphasized. Broadly speaking, one finds one category of definitions that focuses on knowledge as some kind of *outcome*. This is the case of Daniel Bell’s well-known definition of knowledge as “a set of organized statements of fact or ideas” (Bell 1973, p. 41). What we call “practical knowledge”, a concept that focuses on getting things made or done, shares the same characteristic. In general what we labeled ‘utility oriented’ knowledge also belongs to this category of knowledge. As a contrast there is a definition that focuses on knowledge as *procedure*. Knorr Cetina’s concept of ‘epistemic cultures’ distinguishes between cultures on the basis of process, or on how epistemic cultures ‘make knowledge’ in different ways (Knorr Cetina 1999). This defining characteristic is shared by definitions that focus on knowledge as a process either widely defined as a set of cultural activities or as a specific procedure like in traditional definitions of scientific method. A number of frequently used pairs of concepts in the literature reflects this shared underlying distinction between *knowledge as outcome* and *knowledge as procedure*, such as ‘theoretical’ and ‘practical’ knowledge, a ‘cultural’ and ‘utilitarian’ purpose for basic research and higher education (Kogan et al. 2000), ‘applied’ and ‘pure’ research modes (Becher 1989). This distinction also forms the basis for the distinction between ‘Mode 1’ and ‘Mode 2’ knowledge production (Gibbons et al. 1994).

The widening concept of knowledge, therefore, cannot be taken to mean that we are being invaded by a wholly new concept of knowledge. What it means is that there is a new emphasis that affects the process of knowledge production from emphasizing knowledge as procedure to emphasizing knowledge as outcome. Although the emphasis may be new, the concepts of knowledge involved have been around for a long time. It is for instance no novelty that result oriented knowledge exists in academia (cf. law, medicine, engineering etc. and applied science). However, its role and status in academia has changed. This change is visible in a number of ways. The process of justifying academia has changed, and new forms of organizing and funding research have emerged. Visible signs of this are the emergence of research parks, increased emphasis on externally funded research and the proliferation of thematic cross-disciplinary research centers. At the same

time the positivist belief in scientific method, in knowledge as procedure has weakened as illustrated by Paul Feyerabend's thesis about "anything goes" (Feyerabend 1988) and Latour and Woolgar's ethno-methodological study *Laboratory life* (Latour and Woolgar 1986). However, this does not necessarily mean that the actual knowledge production defined as the social practice and research activity of individuals has changed very much. In her study *Academic Identities and Policy Change in Higher Education* Mary Henkel (2000) points out that changes at the level of individual behavior are far less marked than ideological and formal organizational changes. This finding was also supported by the other nation studies in the three nation comparative project of which Henkel's study was a part (Kogan et al. 2000). In trying to answer the first question, we have ended up answering the third of our questions in addition to the first one, since the answer to whether the new mode of knowledge production is new, was to point out the aspects that (only) seem to be new and the ones that have not changed very much.

The second question concerns whether the change is a uniform process across disciplines or not. Again the literature offers contrasting views. From quite different positions Gibbons et al. (1994) and Gross et al. (1996) focus on a development that they consider a general phenomenon affecting all academic research across disciplines. Gibbons and his collaborators focus on a general movement from one mode of knowledge production to another from an ostensibly descriptive position, but according to critics like Ziman (1996) it is also an implicit post-modern vision, a normative statement in favor of the same movement. In stark contrast to their message is the clear and explicit normative defense of traditional positivist science that Gross and collaborators offer in their comprehensive edited book, *The Flight From Science and Reason*. Theirs is a forceful cross-disciplinary counter-attack against what the authors see as a destructive development affecting academic disciplines across the board: from physics to cultural studies. Their disagreement aside, the discourse in both these contributions is generalizing. They agree on the observation of a general movement of knowledge production or research practices, from one mode to another, although they differ sharply in their judgement about it.

Tony Becher (1989) and Karin Knorr Cetina (1999) attack the question about the development of knowledge from a very different perspective. From their perspective one cannot understand knowledge development without understanding the differentiated cultural machinery into which the disciplines are embedded. Knorr Cetina's book on 'epistemic cultures' seeks to demonstrate the diversity of the epistemic cultures of academic disciplines and the ways in which they make knowledge through a comparison of high energy physics and molecular biology. She claims that the diversity reveals

the fragmentation of contemporary science: "... a whole landscape of independent epistemic monopolies producing vastly different products" (Knorr Cetina 1999, p. 4). Although there may be general causes behind the process of fragmentation she observes, she offers little evidence of a common movement from one research mode to another. Becher's concept of 'research mode' refers to the way in which research is done, but also to the social relations and policies of the various disciplinary groups. Research modes may be classified along two dimensions: 1) 'hard' vs. 'soft' and 2) 'pure' vs. 'applied' research.² Different research modes may be found in any disciplinary fields, as distinctions between the different disciplines in the same field or even between disciplinary specialties or sub-specialties. A discipline or specialty may even change research mode during its development (Becher 1989). However, the main thrust of the argument is that certain research modes tend to dominate and characterize different disciplines, and differentiate between them.

A recent contribution that surprisingly also emphasizes diversity is the follow-up to *the New Production of Knowledge*, a book by Nowotny et al. (2001), titled *Re-Thinking Science*. This book gives much more of a contextual and 'thick' description of the topic and more nuanced, less normatively biased analyses. Their analyses bring forth the complexity of the issue of knowledge and changes in knowledge production. The authors seek to demonstrate that although they hold on to their notion of an emerging Mode 2 knowledge production, the process is neither deterministic nor uniform. It is complex, and its implications vary across academic fields and social settings. One of their main contentions is that 'science' or 'research' is becoming more 'contextualized': Whereas science traditionally has been regarded as an inner directed, intellectually self-propelled enterprise that has 'spoken' to society, it now increasingly finds itself integrated in society, embedded in a context that increasingly 'speaks back' to science. The process whereby this happens is extremely complex, as are its implications.

There is, however, one kind of development that makes it very easy and straightforward to understand why this integration happens and why its implications must necessarily be complex. The transition of higher education from an elite to a mass system in North America, Europe and elsewhere, meant that a system that for centuries catered to a very small fraction of the population, in the matter of four decades grew from serving a few percent, to encompassing about one half of each new generation. Research has experienced a similar growth, which means that employers – private companies, organizations and public enterprises – increasingly need research in order to do their job properly. They express this need in various ways. Partly they start to buy or produce their own research. Partly they need research

trained employees in order to apply research-based products. But as higher education institutions become more influential because research and scientific values become more widespread in society, they also become exposed to a stronger and more diverse influence from their surroundings – a steadily more informed and better educated public. Thus there is a two-way development of steadily stronger inter-relationships and mutual influences. This development also affects our notions about what research and academic activity is about. Although this may expose universities to a pressure to become more useful, this utilitarian pressure is not uniform because the needs of those who express them are more varied than ever.

Among a number of factors that add to this development is the inclusion of a wide array of previously distinct vocational schools into the higher education system. This brings in new constituencies with their often idiosyncratic ideas about knowledge that contribute to the dilution of traditional scientific conceptions. Put differently: as society becomes more ‘knowledgeable’, higher education has come under pressure to expand the kinds and types of knowledge it provides and to diversify the criteria by which it is judged. Traditional ideals about what counts as knowledge thus tend to be diluted. To put it shortly: as society became more ‘knowledgeable’, knowledge becomes more ‘social’ (Nowotny et al. 2001).

The discussion until now has tried to demonstrate the complexity and mix of diversifying and unifying trends that lie behind the widening and more utilitarian concept of knowledge that is emerging. Our next task is to have a closer look at some of the different social and political forces that are behind this development.

Social and political transformation

Having dealt with changes in the organization of knowledge production, one of the points we made above was about its embeddedness in a wider set of social and political institutions. We therefore need to go beyond the organization of knowledge production itself. The major social transformation that has affected knowledge production and higher education institutions has already been mentioned. Let us look briefly at some of the further implications of massification. It is quite common to regard massification as an international process that affected educational systems and societies, at least in the Europe, North America and Austral-Asia, in a uniform way with respect to a number of general characteristics. Increased participation rates made higher education and research important to steadily increasing population groups, but at the same less exclusive, and less associated with elevated social status. The number of higher education faculty grew as well, and university professors

in particular have felt considerably less exclusive than before, as they have experienced a declining income in relative terms and a loss of power and influence inside academia in absolute terms.

The changing social function of the universities, it has been argued, is sometimes confused with their scientific function (Kogan et al. 2000, Nowotny et al. 2001). Whereas there is little evidence to support the notion of deteriorating academic quality in students and faculty, it is obvious that both students and faculty have become less of a social elite than they used to be. Counter strategies aiming at preserving an elitist element within the higher education system by creating a binary or a stratified system in a number of European countries have failed. The idea that one can establish and preserve an effective formal division between institutions that are focused on pure research and institutions that are more utility oriented in their approach to knowledge production, in order to protect the former against “external influence”, have so far not been successful. Whilst non-university institutions have tried to become research institutions, research universities have never given up more utility oriented, applied research and vocationally oriented education programs. Once established, such formal divides have tended to break down. The reason for the failure therefore is that the attempts at isolating the ‘scientific’ core have been based on premises (the aim of preserving elite status) that underestimated the forces – of ‘academic’ as well as ‘applied drift’ – within higher education itself. Put differently: this illustrates how the ‘scientific core’ expands, whilst at the same it becomes integrated with ‘social’, more utilitarian demands and needs in new settings.

This being said, it is important to keep in mind that the tendencies described above do not mean that higher education systems necessarily are converging. Although they are faced with very similar challenges caused by growth and processes related to growth, we know from comparative studies of reforms and change in higher education that the way in which such problems are handled may differ considerably and often in ways that preserve rather than reduce nationally distinct characteristics (Kogan et al. 2000, Musselin 1998).

From the point of view of political authorities growth in higher education has changed the conditions of political control and management radically. The size of higher education budgets has gone from consuming an insignificant fraction to a considerable percentage of national budgets. This has made higher education much more visible and for that reason politically salient. Furthermore, what higher education institutions do today directly affect many voters, as students, consumers of research or as employees. This creates a powerful political motive for controlling costs and performance. Growth has also affected the conditions of managerial control and academic

autonomy. Whereas a small institutionally and socially homogenous system lends itself to informal mechanisms of management and control, the sharp growth and emergence of an institutionally and socially far more heterogeneous and functionally more complex system, has been followed by the introduction of more formal mechanisms of management control and the rise of stronger administrative apparatuses nationally as well as within institutions. This has also resulted in more visible demands to make universities more efficient and more accountable and raised controversies about the state and function of academic autonomy as we have seen in the discussions about 'the Evaluative State' (Neave 1988, p. 7) and New Public Management ideals in higher education (Bleiklie 1998).

There is an additional argument that may explain why political authorities are supposedly more concerned with efficiency and less concerned about the traditional 'cultural mission' of academic institutions. The argument holds that the nation state is in decline, challenged by globalization and supranational political institutions such as the EU. This undermines the idea of a national culture and the idea of national identity as the basis for legitimacy for higher education institutions. Traditional academic values are transformed into values associated with economic enterprise and consumerism and underpin such seemingly academic concepts as 'quality' and 'excellence' (Readings 1996). There are no doubt several observations that may support this argument. The emergence of major US research universities as global players, the rise of virtual universities and the establishment of supranational research funding programs within the EU, may mark the beginning of a possibly accelerating development.

Again two reservations are called for. Discussions about the rise of the 'Evaluative State', the introduction of 'New Public Management' ideals and the 'decline of the nation state' may give the impression of a global transformation of higher education. This may indicate that we are witnessing an international process of standardization. However, in practice the way in which different governments have introduced New Public Management reforms demonstrates that they have devised very different policies and administrative arrangements under that label. This seems to defy the idea of international convergence. In comparative terms parallel movements seem to be a more appropriate characteristic.

Furthermore, internationalization means that most disciplines and most kinds of knowledge production are increasingly based on international networks, and the tendency among academics has been to identify even more with international communities, networks and institutions than they used to. It is, accordingly, increasingly difficult for nation-states to serve as authoritative centers for production and certification of knowledge, and they have

to rely more on international standards in their attempts to develop a policy for creation and communication of knowledge. Yet the national system for communication and creation of knowledge has not become a less important basis for research and development of experts and elite personnel. It still sets the conditions for what kinds of received knowledge shall be taken for granted and passed on to new generations, and for the norms that regulate career advancement and elite selection (Byrkjeflot 2001).

The second reservation has to do with the notion of academic autonomy under attack from political authorities. It suggests that universities and individual academics once used to be autonomous and are now being reigned in by governments or the market who demand useful products and value for money. While this certainly may be true in some cases, the notion is problematic both because it assumes uniformly that autonomy was once enjoyed and that it uniformly now is under attack. The case of England between 1980 and 2000 may illustrate how academic autonomy may come under attack, resulting in a situation where academics and institutions clearly enjoy less autonomy. However, during the same period Swedish institutions have been granted more autonomy. Finally, the situation of Norwegian academic institutions is characterized by relative stability (Kogan et al. 2000). This suggests considerable cross-national variation with regard to the state of academic autonomy. The latter case may also illustrate a further point. Looking at the 200-year history of Norwegian universities, the loss of autonomy over time is not a striking feature. However, the most striking characteristic is a remarkable stability regarding the coordinating forces that have been regulating higher education. Apart from the fact that growth has been followed by more formalized forms of management and control, higher education institutions have been integrated parts of the civil service all the time, and manpower needs as central authorities have defined them, have been decisive for the overall size and structure of the system. On the other hand, the institutions have also been left to formulate their own policies and it is in practice hard to tell state influence from academic autonomy. However, the beliefs about the development and fundamental change of the relationship between the state and academic institutions seem to live a life on their own, and the prevailing assumptions today are strikingly similar to those expressed at the beginning of the last century (Bleiklie et al. 2000).

These observations suggest not just considerable cross-national variation, but also highlight the complexity of relations between higher education, state and society. It demonstrates how an apparently straightforward process, massification, is associated with an array of different tendencies that raise the question of the cohesion and direction of higher education. As scholars we

may be faced with the challenge of being able to develop concepts that enable us to grasp more than one trend and possibly contradicting developments.

Knowledge regimes, interests and alliances

To understand the driving forces behind this development we suggest to look at the relations between some of the most important actors in the struggle to define the true nature of knowledge: states and politicians, institutional leaders and students, researchers and intellectuals, consultants and business leaders. These relations are determined by the interests of the actors involved, the alliances they form and the regimes they constitute. *Knowledge interests* are therefore the key, together with the linked concepts of *knowledge alliances* and *knowledge regimes*.³

In relation to the discussion about the utility oriented concept of knowledge we argued that one of the reasons why it has been gaining ground is that expansion has brought new actors into and in contact with the higher education system, be they new categories of students or faculty, administrators or new users of research. They represent potentially at least, new interests and ideas about knowledge. In controversies where the value of social utility is pitted against the cultural value of academic autonomy and the seeking of truth for its own sake, new actors with different interests may change the established knowledge regime by forging new alliances that can tilt the existing power balance. Periods of transition are characterized not only by the introduction of new values, but also by a changing rank order between established ones. Such transitions often imply that the political game, the actors' roles and strategic positions are redefined.

Controversies related to the divergent conceptions of knowledge often mean that networks of actors form alliances based on common knowledge conceptions. Such conceptions and alliances may furthermore be based on the social or institutional position or affiliation of the actors. Until now we have concentrated on two actor networks and knowledge conceptions: a *utility-oriented* conception, and a *merit-and-truth-oriented* conception. However, with increased application of scientific knowledge and increased support for a utility oriented conception of knowledge, the question of the purpose and consequences of knowledge application arises. This has given rise to an *ethics-oriented* conception for instance in connection with biotechnology, focussing on such issues as risk and protection of human rights. It follows that discussion about *knowledge production* (research, and education) will likely be organized around the relationship between utility and truth, but when it comes to *knowledge application*, we expect the discussion to turn on the relationship between ethics and utility.

Alliances and oppositions, in turn, may form the bases of knowledge regimes: an insight, which is most helpful when we come to the comparison of countries with different traditions for knowledge management. Let us illustrate the latter point by the previous mentioned comparison of higher education reforms in England, Norway and Sweden. This comparison clearly illustrates the relationship between knowledge regimes and policies with regard to institutional autonomy and how to strike a balance between utility oriented and truth and merit oriented values in higher education.

Summing up the comparison the author writes: "In spite of the fact that the countries apparently moved in the same direction they did so in manners that were characterized by different national points of departure and that to some extent seemed to sustain national peculiarities. Thus the 1977 reform gave Sweden a point of departure that was different from England and Norway when the reforms of the late 1980s and early 1990s were conceived. Having introduced reforms in the 1970s that significantly reduced institutional autonomy, and tailored the educational programs to national labor market planning, the latter reforms were considered to move higher education out of the grip of the central government and closer to traditional academic values. In England and Norway the reforms were regarded as moves in the opposite direction as the state tried to gain control of higher education in order to control costs and use it in the service of general economic policy goals. In addition the politicization of higher education meant different things in the three countries. In England the influence of education ministers seems to have been particularly strong. In Sweden party politics have influenced policies and in Norway MPs have acted as representatives of regions and their local state colleges rather than as party members." (Bleiklie 2000).

Let us finally discuss some implications regarding knowledge's role in social development. We question the assumption that there is a necessary relationship between a generally wider concept of knowledge and specific education and research policies. A wider concept of knowledge may serve equally well as arguments for a more scientific (truth and merit) or socially responsible (ethical) concept of knowledge, as for a purely utilitarian one. In the non-utilitarian knowledge alliance, there has long been a concern with knowledge's role in *social development*, with education being seen as one of the main avenues for achieving equality of opportunity, and for lessening class constraints on those whose innate abilities can greatly benefit the totality. The formal education system has been the focus here, because it is so amenable to state steering, and the "other educational system" – adult education, further education, life-long learning, etc. – has received less attention. However, with the transition to a more utility-oriented knowledge concept, and with the various efforts to create a more knowledge-intensive private busi-

ness sector, the focus has now moved towards this alternative system. OECD estimates indicate that the Norwegian market for adult- and further education will grow from a 2000 annual level of about 10 billion NOK to at least 40–50 billion NOK in the course of a few years. Not surprisingly, a number of actors – both national and international – are ready to enter the field, thereby taking responsibility for educational tasks that have traditionally belonged to the public educational system. Distance education, thanks to developments in ICT, is also acting in this direction (though the traditional public institutions have not yet found themselves excluded). Yet, it is an open question what this new competitive situation may entail (ByrkjeflØt 2001b). The outcome, we suggest, will depend, to a great extent, on the kind of knowledge alliances and knowledge regimes that become established, and what they will be, will be much influenced by the alliances and regimes that they replace: *path dependence*, as institutionalists call it. There are many indications that research and education may have different effects within different disciplines, within different fields of knowledge and within different states.

Conclusion

This framework for analysis – a small number of contending interest-driven conceptions of knowledge, leading to several alternative sets of alliances and oppositions, leading to a range of possible knowledge regimes that, though never immutable, can often become quite deeply entrenched. Without such a framework, comparison would not be possible, and we would be reduced to asking, “what kind of cat is this dog?” Nor would we be able to handle the phenomenon – “glocalisation”, as it is sometimes called – whereby a single international force gives rise to widely divergent, yet dynamically stable, outcomes in different localities. This, of course, is the start of it all, not the end, because we are now in a position to get to useful grips with a whole range of important questions. We can mention the shift, already evident in the business world, from publicly-conferred to privately achieved qualification: a shift that has been highlighted by higher education reform movements in a number of European countries. Then there is the whole question of standardisation, through the copying of primarily American arrangements, and the possibility that present European programmes for student exchange and research funding may actually be contributing to that standardisation. Finally, we can mention the newly emergent prospect of “virtual universities” that has been opened up by developments in ICTs. How might they reach down into specific localities? Might virtual students decide to migrate and become real students? And how will these sorts of changes impinge on the non-virtual universities with which we have long been familiar?

Notes

1. We are indebted to Michael Thompson for his contribution to the development and formulation of the ideas in this part of the paper that was first written in connection with a joint research proposal for a centre of excellence at the Norwegian Center for Research in Organization and Management, Democracy, Knowledge, Technology. Proposal for a center of excellence 2002–2007.
2. The first distinction refers to research methods and may be illustrated by the distinction between ‘hard’ science that relies on scientific proof and hermeneutic approaches that rely on interpretation. The second distinction refers to the difference between basic research that have no other purpose beyond the accumulation of knowledge and research that aims at achieving results that can be applied for socially useful purposes (Becher 1989).
3. The concept of a ‘regime’ as we use it, refers both to a formal aspect, a form of governance and a procedural aspect, a manner of governing and comprises thus both the structures and processes of governance.

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