



# **Disciplinary Boundaries between the Social Sciences and Humanities**

## **Comparative report on Interdisciplinarity**

May 2005

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## Table of contents

<b>COMPARATIVE REPORT ON INTERDISCIPLINARITY .....</b>	<b>1</b>
<b>TABLE OF CONTENTS .....</b>	<b>2</b>
<i>Table 1: Basic facts in the system of higher education at national level .....</i>	<i>3</i>
1.0 INTRODUCTION.....	4
1.1 Conceptual distinctions relevant for the report.....	4
1.2 Distinctions.....	6
1.3 Brief summary of the system of higher education in eight European countries.....	7
UK.....	7
Finland.....	7
Spain.....	8
Sweden.....	8
Germany.....	9
Hungary.....	9
France.....	10
Norway.....	10
2.0 POLITICAL LEVEL: THE RELATIONSHIP BETWEEN STATE AND EDUCATION.....	12
<i>Table 2: Autonomously managed versus centrally controlled higher education institutions.....</i>	<i>12</i>
2.1 Ministerial policies on interdisciplinarity .....	13
2.1.1 Ministerial policies on interdisciplinarity in autonomously managed higher education institutions.....	13
2.1.2 Ministerial policies on interdisciplinarity in centrally controlled higher education institutions.....	15
2.2 Structural and organizational details .....	15
2.2.1 Structural and organizational details in autonomously managed higher education institutions.....	15
2.2.2 Structural and organizational details in centrally controlled higher education institutions.....	17
2.3 The implementation of the Bologna process and its impact on interdisciplinarity.....	19
2.3.1 The implementation of the Bologna process and its impact on interdisciplinarity in autonomously controlled higher education institutions .....	19
2.3.2 The implementation of the Bologna process and its impact on interdisciplinarity in centrally controlled higher education institutions .....	20
2.4 Summary.....	21
3.0 STRATEGIC LEVEL: RESEARCH FUNDING AND EVALUATION PROCEDURES AND THEIR IMPACT ON INTERDISCIPLINARITY.....	22
<i>Table 3: Main funding bodies for the social sciences and humanities.....</i>	<i>22</i>
3.1 Funding bodies.....	23
3.2 Evaluation/assessment agencies .....	24
2.3 Summary .....	25
4.0 OPERATIONAL LEVEL: INTERDISCIPLINARITY AT THE LEVEL OF HIGHER EDUCATION INSTITUTIONS .....	26
<i>Table 4: Occurrence of interdisciplinarity at different educational and research levels .....</i>	<i>26</i>
3.1 At undergraduate level.....	26
3.2 At postgraduate and research level.....	27
3.3 Internal organisation .....	28
3.1 Summary .....	28
4.0 EPISTEMOLOGICAL PERSPECTIVES ON THE CONSTRUCTION OF INTERDISCIPLINARITY .....	30
4.1 Hard/soft science .....	30
4.2 Specialized/generalized knowledge.....	31
4.3 Summary .....	32
5.0 CONCLUSION .....	33
REFERENCES.....	34

**Table 1: Basic facts about the system of higher education in eight European countries, 2005.**

<b>Nation</b>	<b>Population</b>	<b>Number of higher education institutions</b>	<b>Number of students</b>
<b>Finland</b> <sup>1</sup>	About 5.2 million	20 universities and 29 polytechnics	Approximately 174 000 students <sup>2</sup>
<b>France</b> <sup>3</sup>	About 58.6 million	82 public sector universities	About 1.8 million students <sup>4</sup>
<b>Germany</b> <sup>5</sup>	About 82.4 million	333 higher education institutions (of which 117 are universities)	Approximately 1.8 million students <sup>6</sup>
<b>Hungary</b> <sup>7</sup>	About 10 million	61 higher education institutions (of which 18 are universities)	About 280 000 students <sup>8</sup>
<b>Norway</b> <sup>9</sup>	About 4.5 million	53 higher education institutions (of which 4 are universities)	About 200 000 students
<b>Spain</b> <sup>10</sup>	About 40.7 million	68 universities (48 state and 20 private)	About 1.5 million students <sup>11</sup>
<b>Sweden</b> <sup>12</sup>	About 9 million	50 higher education institutions (of which 13 are universities)	About 340 000 students
<b>UK</b> <sup>13</sup>	About 59.6 million	177 (of which 115 are universities)	Almost 1.8 million students

<sup>1</sup> Keskinen and Silius (2005: 3, 4, 17).

<sup>2</sup> [www.eurydice.org](http://www.eurydice.org), statistics accessed 2005-03-03

<sup>3</sup> Le Feuvre and Metso (2005: 16, 25).

<sup>4</sup> [www.eurydice.org](http://www.eurydice.org), statistics accessed 2005-03-03

<sup>5</sup> Krebs, Rebecca, Siouti, Irini, Apitzsch, Ursula and Silke Wenk (2005: 2, 17, 18).

<sup>6</sup> [www.eurydice.org](http://www.eurydice.org), statistics accessed 2005-03-03.

<sup>7</sup> Jakab, Eniko, with Lukic, Jasmina and Kata Kovári-Krečsmáry (2005: 7, 8, 23).

<sup>8</sup> [www.eurydice.org](http://www.eurydice.org), statistics accessed 2005-03-03.

<sup>9</sup> Widerberg et al (2005: 12, 26).

<sup>10</sup> Carrera Suarez, Isabel, Vinuela Suarez, Laura and Carla Rodriguez Gonzalez (2005: 2, 19)

<sup>11</sup> [www.eurydice.org](http://www.eurydice.org), statistics accessed 2005-03-03

<sup>12</sup> Holm and Liinason (2005: 4, 6).

<sup>13</sup> Griffin, Gabriele, with Medhurst, Pam and Trish Green (2005:6, 21, 22)

## 1.0 Introduction

This report focuses on the relationship between the possibilities for interdisciplinary research in eight European countries: Finland, France, Germany, Hungary, Norway, Spain, Sweden and the UK. All these countries except Norway are members of the EU, and all are signatories to the Bologna Agreement. They are partners in a specific targeted research project (STREP)<sup>14</sup> on ‘Changing Knowledge and Disciplinary Boundaries Through Integrative Research Methods in the Social Sciences and Humanities’, funded under the European Commission’s Framework 6, Priority 7: ‘Citizens and Governance in a Knowledge Based Society’. A key objective of this project is to understand the barriers to interdisciplinarity in the social sciences and humanities. This report therefore and specifically focuses on obstacles to and opportunities for interdisciplinarity within higher education and research.

In order to establish a conceptual foundation for this report we begin by drawing some distinctions within a conceptual field often referred to under the umbrella term ‘interdisciplinarity’. Then we provide a short overview of the specific conditions for interdisciplinarity within respective system of higher education, based on the national reports. In section 2.0 *Political level: The relationship between state and education*, we discuss the possibilities for and obstacles to interdisciplinarity as they are observed in ministerial policies, structural and organizational details and the implementation of the Bologna process. In section 3.0 *Strategic level: Research funding and evaluation procedures and their impact on interdisciplinarity*, we focus on funding bodies and evaluation agencies in order to capture their structures and scrutinize their conditions for interdisciplinarity to materialize within higher education and research. In section 4.0 *Operational level: interdisciplinarity at the level of higher education institutions*, we identify the occurrences of and possibilities for interdisciplinarity within different levels of education and research at the actual higher education institutions. Furthermore, we discuss in this section the internal organisation of these higher education institutions and its effect on interdisciplinarity. In the penultimate section 5.0 *Epistemological perspectives on the construction of interdisciplinarity*, we depict some disparate views on different forms of interdisciplinarity and their relationship to different understandings of knowledge, as they are identified in the national reports. And finally, although every chapter contains a summary, there is a summary of the findings of the report in section 6.0 *Conclusions*.<sup>15</sup>

### 1.1 Conceptual distinctions relevant for the report

In the national ministerial policies of the eight European countries discussed in this report, there are neither explicit definitions of what is meant by ‘interdisciplinarity’ nor any clear distinctions drawn between *interdisciplinarity* proper and its conceptual relatives, especially *multidisciplinarity*. On the contrary, ‘interdisciplinarity’ seems conceptually mixed together with two other varieties of crossing disciplinary boundaries, ‘multidisciplinarity’ and ‘interdisciplinarity’.<sup>16</sup> Consequently, in several

<sup>14</sup> See [www.hull.ac.uk/researchintegration](http://www.hull.ac.uk/researchintegration) for further details.

<sup>15</sup> Mia Liinason has done most of the work in researching and writing this report. Ulla M Holm has revised it and written some lines on the concept of interdisciplinarity.

<sup>16</sup> In the Finnish context, the same word (*monitieteisyys*) is used when addressing both multidisciplinarity and interdisciplinarity, with an expectation of a multidisciplinary short-time effect, i.e. collaborative projects with researchers from different

of the national reports there are reflections on the concept of interdisciplinarity and its conceptual relatives.

Here, however, we will discuss how we use the concept ‘interdisciplinarity’ and some of its relatives that as the basis for this report. But first we shall provide a short account of the general view on different varieties of crossing disciplinary boundaries in the national reports.

A common way of drawing distinctions in the national reports is to stress three levels of interdisciplinarity: i.e. multi-, inter- and transdisciplinarity. Here, ‘multidisciplinarity’ is mainly described as an additive process, where different disciplines only join administratively. ‘Interdisciplinarity’ proper, however, is described in a two-fold way: on the one hand, as a process where elements from different disciplines are integrated, in a crossing of traditional disciplinary lines without an aim to challenge the borders of the disciplines.<sup>17</sup> On the other hand, interdisciplinarity is also described as a critical position striving to challenge the borders of disciplines – a view that pushes ‘interdisciplinarity’ closer to the level of transdisciplinarity. ‘Transdisciplinarity’ is understood as a more critical concept than multi- or interdisciplinarity, demanding a stronger reflexivity on disciplinary perspectives and striving to produce knowledge beyond disciplinary thinking (Widerberg et al 2005: 48, Krebs et al. 2005: 47, Holm and Liinason, 2005: 40).

It is also necessary to stress the disparity between ‘instrumental’ and ‘cognitive’ interdisciplinarity, identified in the national contexts. These two kinds of interdisciplinarity signify two different kinds of knowledge-seeking strategies, where instrumental interdisciplinarity aims at problem solving (often under the denominations of ‘applied science’ or ‘multidisciplinarity’) while cognitive interdisciplinarity handles questions of fundamental understanding (often talked about as forms of ‘inter-’ or ‘transdisciplinarity’).<sup>18</sup> We stress this difference, because of the identified tendency in the national reports of ministerial policies to focus on instrumental interdisciplinarity, while leaving forms of what we call ‘cognitive interdisciplinarity’ behind. It establishes an imbalance that may render obstacles for the establishment of interdisciplinary research, not only because of the need for the development of concepts, but also because of the simplistic view of knowledge and knowledge-seeking strategies observed.

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disciplines, and an interdisciplinary effect, i.e. integration of research themes, methods and theoretical approaches, in the long run (Keskinen and Silius 2005: 40).

<sup>17</sup> This kind of interdisciplinarity is identified in interdisciplinary subjects, successfully disciplinized and recognized as autonomous, such as gender studies in some national contexts, for instance. These are subjects that cross traditional disciplinary borders but have a coherent body of knowledge not belonging to any other discipline. One suggestion of a term for these subjects is ‘neo-disciplines’ (Long 2002: 14).

<sup>18</sup> In the Swedish context, however, the disparity between instrumental interdisciplinarity and cognitive interdisciplinarity is identified as a difference between ‘benefit research’, i.e. instrumental interdisciplinarity and ‘curiosity research’ or ‘basic research’, i.e. cognitive interdisciplinarity. The distinction between benefit/curiosity is particularly upheld by the Swedish government (Holm and Liinason 2005: 38).

## 1.2 Distinctions

The terms ‘interdisciplinarity’ and ‘inter-discipline’ are derived from the term ‘discipline’. The term ‘discipline’ refers to intellectual, i.e. cognitive divisions in research and university communities, even though in practice a discipline is often based on both intellectual and institutional factors (Salter and Hearn 1996:38). The naturalized distinction between disciplinarity and interdisciplinarity has, however, been criticised by, among others (see Jessop and Sum 2003: 89; Klein 1996), feminist epistemologists as a historical construction, developed out of cultural and historical processes (see Boxer 2000: 120; Pryse 1998:6). From this historical perspective, it has been argued that disciplinary borders represent relations of power as much as any rational cuts in the body of knowledge (Lykke 2003: 94).

At present, the critique against disciplinarity arises from different quarters and levels in the system of higher education, e.g. from interdisciplinary researchers at grassroots level as well as from ministries and funding bodies at research policy level. Generally, disciplinarity is criticized for leading to scientific rigidity, where an extremely high specialization renders the research results useless for anyone other than the research team itself. Moreover, there have been demands for research that can handle the disparate questions that appear in the complex societies of today (Latour 1993: 8)

Even though distinctions between interdisciplinarity and its relatives in practice can never be as clear-cut as distinctions drawn in theory, it may be helpful to stress important differences and directions. It is important too, to acknowledge the fact that the concept of ‘interdisciplinarity’ is essentially contested, which means that each contesting party knows that the others saturate it with different forms of evaluative and normative force, that it is open to new, unforeseen understandings and that there therefore exist several views on how to draw distinctions between different forms of interdisciplinarity or rather forms of crossing disciplinary boundaries (see Gallie 1956; Holm 2004: 3). However, in order to adequately understand the discussion on interdisciplinarity in this report, we stipulate some distinctions between interdisciplinarity and its relatives, as we will use them. In particular, for the sake of clarity and especially for our discussion in the last two chapters, we prefer the expression ‘crossing disciplinary boundaries’ (Klein 1996) as the umbrella instead of ‘interdisciplinarity’ for a conceptual field containing interdisciplinarity proper as well as its closest relatives, pluri-, multi- and transdisciplinarity, leaving post- and antidisciplinarity for another discussion and another conceptual field drawing other distinctions than those more or less implicitly drawn in the national reports at hand.

‘Multidisciplinarity’ can be reserved as a term for collaboration between disciplinary approaches, without exceeding the disciplinary borders, their theoretical or methodological frames.

‘Interdisciplinarity’ (proper), then, involves a theoretical and methodological cross-fertilization which transgresses and/or relates to the borders of the disciplines in question (Long, David: 2002: 8, 14). Such cross- fertilization may create new fields of thematic research, sometimes shown in their names, such as ‘social psychology’, ‘social history’, ‘political economy’ et. c. (Long 2002; Jessop and Sum 2003: 89)

‘Transdisciplinarity’, finally, is reserved for a going beyond disciplines and existing canons and a focusing on ontological and epistemological issues in search for a unified theory of all forms of specialized knowledge (Lykke 2004: 97; Salter and Hearn 1996: 35).

All varieties of crossing disciplinary boundaries challenge, however, the highly driven specialisation of the established disciplines as well as the arbitrariness

of disciplinarity in itself. This is reflected in and explains some of the conceptual vagueness in the use of ‘interdisciplinarity’ as an umbrella term for three or more levels of radicality in disciplinary boundary crossing. Irrespective of the character of the challenge or border crossing – whether it is more or less theoretically driven, more or less hard bound to some specific body of knowledge – it is the action of ‘challenging what would otherwise be taken for granted as the proper organization, content, methodology, or purpose of research that creates and defines interdisciplinarity’ (Salter and Hearn 1996: 43). The most radical challenges may in terms of post-disciplinary intellectual implications allow themselves to be historically inspired by pre-disciplinary research approaches without sharp demarcations between areas of research now split between social sciences and humanities (Jessop and Sum 2003: 89). As stated earlier, post-disciplinarity is not discussed here.

### **1.3 Brief summary of the system of higher education in respective national context**

In order to discuss differences and similarities that impact on the establishment of interdisciplinarity in respective national contexts, we now present a short review of the specific conditions of the systems of higher education in eight European countries.

#### **UK**

Higher education institutions in the UK are highly autonomous, although they are broadly regulated by the state through higher education acts, implemented by the governmental Department for Education and Skills (DfES). However, higher education institutions in the UK are strongly effected by market demand, which in practice means that it is easy to set up courses and degrees in disciplines that can demonstrate market demand.

Higher education institutions name faculties/schools and place disciplines according to internal principles rather than in line with some nationally validated structure. However, higher education institutions are constrained by the ways in which research funding as well as teaching quality and research assessments exercises are carried out since these proceed on a disciplinary basis.

Disciplinization in the UK is a bottom-up approach. New courses and curricula are commonly developed as a result of the enthusiasm of individual academics and/or researchers for a particular subject. Provided one can demonstrate a market demand, it is relatively easy to establish a new curriculum or a new degree. The next step, however, to lobby for the acceptance of a new discipline by the government, the funding councils and the quality assurance agencies is difficult, but crucial for the long-term survival of a discipline.

Furthermore, new disciplines can have recruitment problems because pupils from pre-university education have to follow conventional disciplines at school. When a discipline faces recruitment problems, it may become financially not viable.

There has been a relatively low-key engagement with the Bologna process in the UK at the level of day-to-day academia. The Bologna process has not served to promote interdisciplinarity or new forms of knowledge exploration. It has also not had the impact observed elsewhere of raising debates about the nature and substance of disciplines (Griffin et al 2005: 13-14, 18, 23-25, 61).

#### **Finland**

Recent trends in higher education and research in Finland have included changes in the management system of higher education institutions, changes in the funding of

higher education institutions, growing student numbers at the same time as declining rates of teaching staff and the ongoing change connected to the Bologna process. The trend has been towards increasing autonomy for the higher education institutions for a long time. Professors are no longer appointed by the president or the government. The universities decide internally on the distribution of their money. Simultaneously “management by results” has been introduced so that an increasing part of the budget allotted to a university is based on achievements, i.e. the number of Masters and PhDs examined..

The Ministry and each university negotiate objectives and funding levels for that university and sign a three-year contract on these. Within higher education institutions, resources are allocated in a similar way to each faculty and/or department.

The decision to establish advanced level studies and award degrees in a new discipline often requires years of work and lobbying from individual academics and/or researchers. The final decision lies with the Ministry of Education. However, in order to introduce a new field of study, the researcher has to solve problems with the funding system, which to a large extent is based on completed degrees. In a few cases, earmarked funding for professorships or other posts has been important in enabling a further disciplinization of a field (Keskinen and Silius 2005: 6, 8, 11, 13, 21).

### **Spain**

The Spanish system of higher education is very centralized, uniform and state-dependent. Spanish higher education institutions have a strong regional, local and political aspect. All major decisions on education matters are made by the Ministry of Education, which is responsible for policies at national level: decisions on curricula, funding, recruitment of staff, research at all levels, etc. Linked to the Ministry of Education is the *Consejo de Coordinación Universitaria* (CCU), a decision-making body which create and supervises the university departments, approves new higher education institutions and new disciplines, and establishes general criteria for national curricula.

In the classification of the social sciences and humanities there is a relative uniformity in Spanish universities. The strongest definition of a discipline in the Spanish academic system is a ‘knowledge area’. Today, there are 178 ‘knowledge areas’ recognized by the CCU. Recruitment of staff, evaluation of research and practically all crucial education and career matters are circumscribed within the limit of a ‘knowledge area’.

Disciplinization in Spain follows a top-down approach, where the importance of strategic interests and the power of regional and national governments is demonstrated. While changes can be disruptively enforced periodically, the system continues to be very rigid regarding individual change in higher education institutions and the process involved in offering a new degree is lengthy and circumstantial.

Although the government has changed, and certain guidelines may differ as a consequence of the implementation of the Bologna process, the latter is expected to be quite restrictive and offer uniformity in content, certainly at first degree level (Carrera Suarez et al 2005: 2, 4-6, 18, 25-26, 29).

### **Sweden**

The higher education institutions in Sweden are highly autonomous. The decision-making process is decentralized and the institutions make their own decisions on

curricula, recruitment of staff and internal organisation. The government broadly controls the system of higher education via assessment exercises and the recognition of new institutions, their right to award degrees and/or the right to receive state subsidies, executed by the National Agency for Higher Education, the HSV.

The planning of courses and programmes does not require supervision from the government, although every program and course must be organised within one of the four academic sectors recognized by the government: a) humanities and social sciences, b) medicine c) natural sciences d) technology.

The establishment of a new course is to a large extent dependent on the effort of individual academics. Nevertheless, the possibilities for establishing a new field of study are dependent on funding for teachers, which in turn is bound to one of the four scientific sectors recognized by the government. This makes lobbying for funding from one's own university division an important task, as well as lobbying for earmarked funding from the government.

The implementation of the Bologna process has already started through the ECTS credit system, the mobility of students and the quality assurance programmes. Forthcoming changes will concentrate on the increased mobility of students, a more flexible under- and postgraduate education, and an adaptation of the under- and postgraduate education to society and the labour market (Holm and Liinason 2005: 3, 5-6, 21-22, 31).

### **Germany**

Higher education institutions in Germany are controlled and financed by the Ministries of Education in each federal state. The relationship between the ministries and the higher education institutions is regulated by different Acts of Higher Education. In 1998, the call for more autonomy was met by the institutionalizing of evaluation, accountability, performance-related pay and conditional state funding. As a consequence, more hierarchical models of university and department structures have been installed. However, this shift, from state control towards more market orientation creates an increased importance of the organisation itself.

There are strong local variations within the classification of disciplines within the system of higher education in Germany, although two main tendencies can be observed: some institutions underline the need to combine disciplines according to a conservative model, while other institutions stress the need for a non-conventional division.

The process of disciplinization is sometimes uncomplicated, but depends on the interest from influential people within the university in question. It is further understood as a result of individual academics' efforts. As a consequence of the universities' economisation policies, increasing workloads make personal involvement more difficult.

It is assumed that the new system of courses, as a consequence of the Bologna process, will be structured in a much more detailed and fixed way than before (Krebs, et al. 2005: 4, 9, 19, 26-28, 33-34, 49, 61).

### **Hungary**

The system of higher education in Hungary is still influenced by the changes related to the political transformations in 1989, as well as by the modification of social needs and expectations. At the same time, the system is currently undergoing another set of far-reaching changes caused by the implementation of the Bologna process. This makes the situation highly complex.

Since the early 1990s, the relationship between the state and education in Hungary has become more decentralised. The state has increased the autonomy of the higher education institutions, so that they have the right to set up their own internal organisational structure, institutes, departments, faculties, research and educational management units, provided they meet the quality and infrastructure requirements made by the Hungarian Accreditation Committee (the HAC). However, the introduction of quality assurance in academia has opened a certain space for the indirect regulatory power of the state. Education also has to satisfy market demands. This establishes a space for efforts to regulate the output of higher education.

The Ministry of Education has produced a classification of the division of disciplines, although not followed by the institutions themselves. Furthermore, disciplinary structuring varies at the level of university education and at the level of doctoral training. Some of the large higher education institutions reproduce conventional boundaries between the disciplines at the level of administration.

In order to establish a new discipline, it is necessary to demonstrate market demand in terms of job opportunities or academic career. However, the recognition of a discipline is dependent on the number of students and the level of qualification granted, because this determines the level of funding from the state budget (Jakab et al 2005: 6-7, 13-14, 18, 29-32)

### **France**

In 2002, an overall reform of the French higher education system was implemented. This reform aimed to make the French higher education architecture more compatible with other European university systems.

Each institution of higher education in France signs a four-year contract with the Ministry of Education. This contract defines the objectives of the university and specifies the allocated budget. The four-year contract is established on the basis of a two-stage internal and external evaluation procedure.

The French higher education system is organized along strictly codified disciplinary lines, although some kind of “multi-disciplinarity” is possible at BA level in most French universities. The Ministry of Education is responsible for defining the disciplines through the *Conseil national des universités*, the CNU. The CNU is a centralised decision-making body which also manages the recruitment and promotion procedures for academic staff. The Ministry of Education recognizes five main subject areas: a) law, economics and management b) humanities and social sciences c) natural sciences and technology d) pharmacy e) medicine and dentistry.

There is no official, formal procedure for the creation of a new discipline within French higher education. The creation of a new discipline is preceded by long and complex processes of negotiation between the Ministry of Education and the academic staff. It is the Ministry who creates and defines the disciplines. This disciplinization process provides ample space for bottom-up initiatives, and changes to the disciplinary order will depend more on the political agenda of the day than on the scientific arguments put forth (Le Feuvre and Metso 2005: 17-18, 30-31, 53).

### **Norway**

In accordance with the Bologna process, the system of higher education in Norway was completely reformed in 2003, a fact that has given implications for the establishment of interdisciplinarity at all levels of higher education in Norway.

The Ministry of Education and Research is Norway’s highest public administrative agency for educational matters, responsible for implementing national

education policies. The Norwegian Parliament and the government define the goals and decide the budgetary frameworks for education.

All state higher education institutions are accredited by the Norwegian Agency for Quality Assurance in Education, the NOKUT. Different accreditations imply different levels of independence from ministerial involvement. For instance, it is easier to get funding from the Research Council of Norway if the institution is accredited as a university. Furthermore, NOKUT, commissioned by the government, is in charge of quality assurance of every Norwegian institution of higher education, a circumstance that establishes tight bonds between the state and the education institutions.

The organization of degrees awarded at institutions of higher education reduces the focus on disciplines and disciplinary divisions, although there is a battle between the conventional university structure and the administration of the new interdisciplinary degree programmes.

The creation of a new discipline in the Norwegian system of higher education is the consequence of a bottom-up process, where individual academics need to argue for the importance of a new discipline in terms of economic and strategic interests. The four criteria used in the distribution of grants to a department exert large influence on the process of disciplinization: a) the basic allocation b) money allotted for each student taking an exam c) publication money, and d) overhead money for external research. This new budget system, where the money comes with the student, implies that a course or a program needs to be attractive to the students in order to have any possibility of being established (Widerberg et al 2005:10, 13-14, 22-23, 31-32).

## 2.0 Political level: The relationship between state and education

**Table 2: Autonomously managed versus centrally controlled higher education institutions in Europe, 2005**

Nation	Autonomously managed higher education institutions	Centrally controlled higher education institutions
Finland	X	
France		X
Germany	X	
Hungary	X	
Norway	X	
Spain		X
Sweden	X	
UK	X	

### **Autonomously managed higher education institutions**

Provided the higher education institutions meet the quality and infrastructure requirements set down by their respective national supervision agencies, autonomously managed universities among other things have the right to:

- set up their own internal organisation with institutes, departments, faculties, research and educational management units
- recruit academic staff
- design their own curricula of courses and programmes

### **Centrally controlled higher education institutions.**

Within centrally controlled systems of higher education there is a close connection between state and education at all levels. Among other things, decisions on the following main issues are made by the respective Ministry of Education:

- the establishment of degrees
- the approval of curricula
- recruitment of academic staff

The division between autonomously managed higher education institutions and centrally controlled higher education institutions is made on the basis of the data supplied by the national reports. It is a significant division, because of the consequences that accompany the different systems.

The national reports show that autonomously managed systems of higher education are contradictory when it comes to possibilities for interdisciplinarity. On the one hand there is great diversity in administrative organisation, a fact that in some instances may create a need for boundaries between humanities and social sciences (which may not have existed earlier as for example in Hungary) which paradoxically establishes a non-flexible system, counterproductive to interdisciplinary collaborations. On the other hand, the autonomously governed system's potential for bottom-up initiatives is shown to be important when looking at former changes made in courses or programmes offered. This makes initiatives for interdisciplinarity

possible, at least in theory. However, obstacles exist – certainly for the establishment of an interdisciplinary field of study at undergraduate level. There are particular difficulties when it comes to funding and administrative organisation, for instance.

Within a centrally controlled system of higher education, there is a strong link between the state and education. This implies that changes can be established quite smoothly, provided that these are supported by the government. But if the changes are not supported by the government, they are very hard to realize. Consequently, the possibility for the establishment of an interdisciplinary field of study in a centrally controlled system is to a large extent dependent on political decisions and strategic interests. This makes the situation difficult for individual academics who wish to establish an interdisciplinary collaborative research project, for instance. On the other hand, provided there is a political will to realize change, it can be carried out with unexpected rapidity. The implementation of the Bologna process may help to establish interdisciplinarity within centrally controlled systems of higher education.

However, both autonomous and centrally controlled systems of higher education are strictly governed via the introduction of the influential assessment agencies. In the national contexts this is identified as a reinforcement of the link between the state and education. Moreover, there exist strong connections between evaluation agencies and funding bodies in many systems of higher education. These are major hindrances for the establishment of any interdisciplinary field of study, as we shall discuss below.

## **2.1 Ministerial policies on interdisciplinarity**

In this section, we describe some of the similarities and discrepancies between the different ministerial policies on interdisciplinarity, as discussed in the national reports.

Obviously, there exists a clear promotion of interdisciplinarity in the ministerial documents referred to in the national reports, although the lack of political will to accomplish changes that should support interdisciplinary training or research implies that a positive ministerial policy may be understood as empty rhetoric, rather than effective policy.

### **2.1.1 Ministerial policies on interdisciplinarity in autonomously managed higher education institutions**

Generally, interdisciplinarity and a crossing of boundaries between disciplines are stated as a goal in the ministerial policies, especially at the level of research. When it comes to undergraduate education, however, the various national policies differ from one another, even though a common attitude is that undergraduate education should be given along disciplinary lines. It is common, however, for ministerial policy in the different national contexts both to promote and to constrain the establishment of interdisciplinarity.

This is the case within the higher education policy in the UK. Here, the Research Assessment Exercise (RAE)<sup>19</sup> simultaneously reinforces disciplinization and interdisciplinarity, by a strong focus on the individual researcher and a lack of interdisciplinary panels, at the same time as they announce that interdisciplinary research centres might become one assessment criterion for the next RAE (Griffin et al 2005: 55).

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<sup>19</sup> The Research Assessment Exercise (RAE) is an assessment exercise in which universities are required to submit all their research-active staff by discipline every four to six years (Griffin et al 2005: 26).

Similarly, in the policies of the German higher educational system the establishment of interdisciplinarity is both proclaimed and rejected through a financial support to some specific interdisciplinary forms, i.e. problem-oriented forms of interdisciplinarity, and leaving other forms without (Krebs et al. 2005: 54). Furthermore, there is a similar situation in the Finnish and Swedish higher educational policy, as well, where interdisciplinarity in terms of collaboration with trade and industry are financially supported by the governments (Keskinen and Silius 2005: 42; Holm and Liinason 2005: 22).

In connection with the implementation of the Bologna process, there is a strong proclamation of interdisciplinarity in the national ministerial policies on higher education. In Hungarian higher educational policy, for instance, there is a willingness from the government, funding bodies and the accreditation committee to facilitate interdisciplinary work (Jakab et al 2005:48) This facilitation, however, is specifically tied to Masters and PhDs. This has similarities with both Norway and Finland, more fully discussed in section 4.

Interestingly, in spite of the fact that Norway is one of the nations where interdisciplinarity in education has been realized through the Quality Reform in 2003, there exist very few official comments on the question of interdisciplinarity. Here, the ministerial policy on interdisciplinarity is implicit rather than explicit, not defined or discussed. Anyhow, it seems as if the reform has been important for the establishment of an interdisciplinary strive throughout the whole system of higher education. Consequently, the Research Council of Norway now stresses collaborative, large scale-projects and the higher education institutions are working with interdisciplinary teaching methods (Widerberg et al 2005: 48).

Overall, policies at ministerial level are often closely bound to the policies of the public funding bodies and the assessment agencies. However, it is very rare that the funding bodies and/or assessment agencies actually produce structures that facilitate interdisciplinarity. Simultaneously, each national report notes the widespread non-existence of any general distinctions between the different concepts of 'multidisciplinarity', 'interdisciplinarity' and 'transdisciplinarity'. The lack of such distinctions can be seen as another manifestation of the previously mentioned governmental lip service. Apart from the obvious fact that a reformation of the system of higher education might be expensive, and therefore not desirable for the government, this non-willingness can be regarded as a form of suspicion against the actual benefit of interdisciplinarity. This is certainly the point when it comes to educational issues, where the ministerial opinion in many national contexts is that interdisciplinarity at MA or PhD level should build upon the disciplinary basis founded at undergraduate level. For a further discussion on this topic, see section 5 in this report.

Much emphasis in governmental policies is put on interdisciplinarity at the level of postgraduate education and research, whilst interdisciplinarity within undergraduate education is constrained. In the national contexts there exist some exceptions, though, as for instance in the spheres of applied science and adult education, visible in the system of higher education in the UK (Griffin et al 2005: 39, 51). At the level of research, there are strong connections between interdisciplinarity and applied science. This emphasized link between university education and labour market/society can be understood as one consequence of the implementation of the Bologna reform, with its emphasis on education for the labour market and the need for research that can handle the complex questions in contemporary society.

### **2.1.2 Ministerial policies on interdisciplinarity in centrally controlled higher education institutions**

The ministerial policies of the Spanish and the French systems of higher education strongly emphasize the establishment of interdisciplinarity, although the discrepancy between the ministerial rhetoric on the advantages of interdisciplinarity and the lack of actual changes in the educational system in higher education institutions is quite conspicuous and identified as an extensive problem.

Ministerial policies in the Spanish context, with their rigid borders of traditional disciplines, are openly criticised. In the most important framework structure for research and funding, the National Plan for R and D, interdisciplinarity appear as a descriptor of quality. However, the lack of any changes that would promote interdisciplinarity in the system of higher education, turn pronouncements like these into lip service rather than effective policy (Carrera Suarez et al 2005: 37).

Likewise, French ministerial policy is positive about interdisciplinarity and stresses its importance for French higher education teaching and research. In spite of the repeated indications of the importance of interdisciplinarity, however, there is in practice very little interdisciplinary training available in France. The French education system is still organised according to a disciplinary structure, although there are some concrete suggestions on interdisciplinary work. Within both university education and research there exists interdisciplinary programs and projects, but interdisciplinarity in basic education is mainly understood as a way to adapt the higher education institutions to the current demands of the labour market. Interdisciplinarity in research is primarily seen as a way to promote mobility among doctoral students and academic staff and as a means of developing more creative research activities (Le Feuvre and Metso 2005: 49).

It is obvious that the most serious obstacle to interdisciplinarity in both these national contexts is the strictly codified and centrally organised system of higher education, with very influential and disciplinarily defined decision-making bodies, as we shall discuss in following section. However, as long as the ministries leave this structure untouched, their proclamation of interdisciplinarity cannot be understood as anything other than empty rhetoric, because it renders many initiatives for interdisciplinary research as well as for interdisciplinary programmes or courses impossible.

## **2.2 Structural and organizational details**

In spite of the manifest and clear proclamations of interdisciplinarity in ministerial policies in many of the national European contexts, there still exist large structural and organizational obstacles to interdisciplinarity within every system of higher education. One such major obstacle, which we will attend to later in this report, is the structure of the evaluation or assessment agencies and funding bodies. First, however, we examine how organizational and structural matters within different systems of higher education affect the possibilities for interdisciplinarity.

### **2.2.1 Structural and organizational details in autonomously managed higher education institutions**

Within several of the autonomously managed systems of higher education, funding is, among other things, based on the number of students taking exams – a fact that indicates the importance of attracting students. In countries driven by market demand, this becomes even more important

The strong focus on market demand differentiates the UK from the other countries. Universities in the UK regard successful recruitment as one indicator of viability. Since this is decisive for funding, it makes successful recruitment an important factor in more than one way for the higher education institutions. Furthermore, seeing that pre-university education in the UK is bound to disciplinary subjects, the recruitment problem is understood as a major disadvantage for the possibilities of establishing a new interdisciplinary subject in the field of higher education.

The non-flexible administrative organisation within higher education institutions is an important factor when it comes to obstacles for interdisciplinarity. This effects the location of disciplines, even though there seldom exists any national classification or codification of disciplines within the social sciences and humanities in autonomously managed systems of higher education. When studying the actual location of disciplines, however, a conventional internal organisation is evident in many national contexts. In practice, this means that disciplines, traditionally perceived as belonging to the social sciences, are located in one group, while disciplines that by tradition have been perceived as belonging to the humanities are located in another. If governmental grants are allotted to the social sciences on the one hand and the humanities on the other this fact renders difficulties for the mobility across faculty borders of teachers as well as students in undergraduate and postgraduate education.

The situation in Sweden, with a large discrepancy between old and new higher education institutions, may constitute an illustrative example of these non-flexible administrative organisations. Despite a ministerial policy that stresses the importance of interdisciplinary cooperation, the administrative organisation in many higher education institutions in Sweden preserves a conventional division between the disciplines and the administrative units they belong to, usually called 'faculties' in the Swedish system of higher education.<sup>20</sup> The old universities are organised along conventional disciplinary and faculty structures, while the internal organisation at the new universities and university colleges more often attempts to realize the ministerial promotion of interdisciplinarity via large and/or un-conventionally composed units. Through the establishment of large departments gathering disciplines that traditionally have been located within separate administrative units, i.e. faculties, as for instance the humanities, the social sciences or the natural sciences, efforts are made to counteract this lack of flexibility (Holm and Liinason 2005: 15).

The national context of the UK exposes yet another kind of discrepancy between old and new higher education institutions, where the funding system both establishes obstacles to and facilitates interdisciplinarity.<sup>21</sup> Here, new universities are less driven by the research imperative, and thus by the funding derived from it, which in turn means that they can afford to be sites of interdisciplinary cooperation. For the new universities, interdisciplinarity is more a matter of the markets they can appeal to than of the research conducted (Griffin et al 2005: 11, 21).

There is, moreover, a clear discrepancy in the national European contexts on whether a large or a small institution of higher education renders interdisciplinary

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<sup>20</sup> 'New universities' here are universities established earlier than 1975. Moreover, the five oldest universities in Sweden today, are the five largest as well (Holm and Liinason 2005: 7, 13).

<sup>21</sup> 'Old' universities are, for instance, Cambridge, London, or Manchester, while Portsmouth or Westminster are examples of 'new' universities, established in 1992 (Griffin et al 2005: 11).

cooperation more or less difficult. Conventionally, the system of higher education in Hungary has been constituted without any separation between the social sciences and the humanities. During the implementation of the Bologna process, the social sciences and humanities have been codified as distinct areas. For this reason, large universities are establishing a division between the two fields, an evident obstacle for interdisciplinary cooperation. At small institutions, however, this is no problem, because one faculty accommodates subjects within the areas of social sciences as well as the humanities. Consequently, this establishes possibilities for interdisciplinary cooperation (Jakab et al 2005: 18).

In the German system of higher education, however, the opposite is mentioned. In this context, large higher education institutions are seen as potential sites for interdisciplinary cooperation. This striking discrepancy depends on two different systems for allocating funding, where the Hungarian model distributes money to each faculty, seen as separate units (according to the latest bill, universities will be free to decide about the internal allocation of their resources from the state budget, Higher Education Bill T/15267, March 2005), while some German higher education institutions are allowed to decide how to allocate money by themselves and can thus react more flexibly to changes (Krebs et al. 2005: 9, 11).

Finally, the Norwegian system of higher education constitutes an example of the importance of re-structuring the administrative organisation. Although the Quality Reform in Norway involved a complete remodelling of the educational system, in line with the Bologna process and with a strong emphasis on possibilities for interdisciplinarity, the internal organisation of higher education institutions remained unchanged (Widerberg et al 2005: 49). Consequently, despite the wide-spread emphasis on interdisciplinary teaching forms like process writing, teamwork and problem solving, this conventional internal organisation produces hindrances for interdisciplinarity, not only on account of funding issues, but also on account of practical day-to-day issues such as the location of students, teachers, administrative staff and so on, in a conventionally discipline-based area, where the concrete physical space continues to define the limits of knowledge.

### **2.2.2 Structural and organizational details in centrally controlled higher education institutions**

Both the Spanish and the French educational systems are strongly linked to the state, through a number of discipline-based decision-making bodies, commissioned by their respective governments.

In Spain, the *Consejo de Coordinación Universitaria* (CCU) has an essential role for Spanish universities. It is linked to the Ministry of Education and makes the most relevant decisions on university policies. The CCU has many tasks, among others the establishment of criteria for the creation, modification and supervision of university departments; the approval of new universities and new disciplines and the establishment of general and compulsory criteria for national curricula. This structure means that universities depend on ministerial decisions for, among other things, the establishment of degrees, the approval of curricula, the approval of recognized disciplines and the recruitment of academic staff.

Moreover, the CCU establishes the 'knowledge areas' which are the organizers of academic life. At present, there are 178 'knowledge areas' recognized by the CCU. All staff must be ascribed to one of these areas, recruitment is made within their limits, evaluation of research, and practically all crucial education and career matters are circumscribed by them.

Among other things, this makes the establishment of a new discipline in the Spanish university context a lengthy process, governed by strategic and political interests. Every initiative for the creation of a new field of study taken by individual academics must be followed by a strong lobbying campaign, although it seldom gets approval from the government. However, if the government itself has a political will to establish a new field of study, the implementation of this new field will flow much more smoothly, accompanied by recognition from the important decision-making bodies and evaluation agencies. This implies that changes supported by the Spanish government have large prospects to succeed, while initiatives from individual academics will have difficulties with, among other things, the decisive recognition from the influential decision-making bodies.

Whether the forthcoming implementation of the Bologna process in Spain will serve the establishment of interdisciplinary study programmes and courses or not, is still to be seen, although the Spanish government strongly accentuates the importance of ‘internationalization’ (Carrera Suarez et al 2005: 5-6, 29), a topic we will return to in section 2.3 of this report.

The Spanish CCU has its equivalence in the French system of higher education in the *Conseil national des universités* (CNU). The CNU is a centralised decision-making body, tied to the Ministry of Education, which not only controls the disciplinary order in the French system of higher education, but also manages the recruitment and promotion procedures for academic staff.

In order for a new field of teaching and research to become a recognized discipline, the Ministry of Education needs to publish a decree and to set up a new CNU-section. The CNU is composed of 11 subject areas that are divided into sections. Each of these sections corresponds to a disciplinary sub-group. Most of the social sciences and humanities belong to the same disciplinary group. Currently there are five interdisciplinary subject areas within the social sciences and humanities recognized by the CNU.

The CNU also acts as the gate keeper institution to academic posts in France. Once a person has submitted and successfully passed a PhD, they cannot apply for an academic position until they have been qualified to do so by the relevant disciplinary section of the CNU. Just as the CNU defines the disciplinary boundaries for the sector of higher education, do the National Committee of Scientific Research, the CN, delimit the disciplinary and interdisciplinary fields for the research sector. The CN has 40 disciplinary sections and one interdisciplinary section (Le Feuvre and Metso 2005: 17-18, 25, 31).

The establishment of a new discipline in the French system of higher education is, like in Spain, a process that depends more on the political agenda of the day than on any scientific argument. Since the disciplines weigh extremely heavily on the sector of higher education as a whole, this is a fact that hampers interdisciplinarity in the overall system of higher education in France, as well as in Spain.

It is obvious that both the Spanish CCU and the French CNU and CN organize their work along strict disciplinary lines, which restrain the possibilities of interdisciplinary teaching and/or research. Their disciplinary and strictly codified structure creates difficulties for academics that want to establish a new field of study, not only because of difficulties along the actual establishment of a new field of study, with a lengthy, politically governed process, but also because of the difficulty to get any formal proof of one’s qualification by the important decision-making bodies and assessment agencies, which are crucial for funding.

### **2.3 The implementation of the Bologna process and its impact on interdisciplinarity**

In many ways, the implementation of the Bologna process has generated an ‘interdisciplinary awareness’ within each European nation discussed here. This has mainly two reasons: first, the emphasis of increased mobility of students and teachers, and secondly, the adaptation of higher education to civil society and the labour market.

Although there are some similarities between the different national education systems, such as increased possibilities for interdisciplinarity within the Masters and PhD programs, there is no consensus in the national reports on whether the implementation of the Bologna process affects the possibilities for interdisciplinarity positively or not. Generally, the answer to this to a large extent depends on the following two conditions within the eight European countries:

- The prevailing administrative organisation in its institutions of higher education.
- The possibilities for additional funding when establishing new degrees.

#### **2.3.1 The implementation of the Bologna process and its impact on interdisciplinarity in autonomously controlled higher education institutions**

Whether or not the implementation of the Bologna process is going to have a positive impact on interdisciplinarity depends to a large extent on the existing administrative model for higher education. This is illustrated by the Hungarian, German and Swedish systems of higher education, where the implementation of the Bologna process paradoxically seems to sharpen the barriers between the social sciences and humanities, in spite of the discursive promotion of interdisciplinarity and actual reorganizations made in these countries, as for instance the reorganization of funding councils in Sweden in 2001.<sup>22</sup>

In the Hungarian system of higher education this paradox is illustrated by the fact mentioned earlier in this report, that the Bologna process classifies the social sciences and humanities as distinct areas. This creates a financial and administrative barrier between the two fields of study that did not exist earlier in the Hungarian system (Jakab et al 2005: 53).

In Germany, on the other hand, the implementation of the Bologna process has been given little additional funding, which has resulted in a strengthening of the boundaries between the disciplines, as a kind of territorial claim (Krebs et al 2005: 51)

Even though the disciplines do not seem to be strengthened through the Bologna process in Sweden, the lack of funding is viewed as one major disadvantage in the Swedish implementation of the Bologna process, with its implications for the establishment of new courses and programmes. Moreover, the administrative organisation at every institution of higher education is going to be an important factor for the actual possibility of establishing new interdisciplinary courses or programmes (Holm and Liinason 2005: 21).

The importance of additional funding is a significant factor, although seldom taken account of within the different systems of higher education – a circumstance

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<sup>22</sup> We shall develop this discussion further in section 3 below.

that provides further difficulties for the establishment of new interdisciplinary degrees.

Within the Finnish system of higher education, however, the importance of additional funding is attended to. By allocating specific funding for the development of new Masters programmes, the Finnish Ministry of Education has promoted a change towards the establishment of new interdisciplinary programmes. This is considered a promising fact in the Finnish implementation of the Bologna process and its impact on the possibilities of establishing new interdisciplinary fields of study (Keskinen and Silius 2005: 46)<sup>23</sup>.

In the Norwegian system of higher education, the main elements from the Bologna process have already been implemented along with the Quality Reform in 2003. By means of its impact on interdisciplinarity, the most comprehensive transformation has been the introduction of generally shorter degree programmes at BA and Masters levels. This may result in a weakening of disciplinary identities, and with that as an opportunity for interdisciplinary alternatives. Already during the creation of the Norwegian BA and Masters programmes, strong emphasis was laid on establishing interdisciplinary programmes, study programmes that by now are identified as interdisciplinary, oriented towards topics rather than disciplines (Widerberg et al 2005: 54).

The implementation of the Bologna process has had an impact in raising debates about the nature and substance of disciplines in every system of higher education scrutinized in the national reports, except for the UK. In the UK, the Bologna process has had little resonance in the academic community, since it is assumed that a restructuring of higher education degrees does not need to occur in the UK as it already has that structure (Griffin et al 2005: 63).

### **2.3.2 The implementation of the Bologna process and its impact on interdisciplinarity in centrally controlled higher education institutions**

Although the implementation of the Bologna process has created an awareness of interdisciplinarity in the Spanish and French higher education contexts, there is no clear evidence that the implementation of the Bologna process will encourage interdisciplinarity. There are, however, different views on this within the national reports.

In Spain, the restrictive, uniform system of higher education will probably direct the changes when implementing the Bologna process. The interpretation of the Bologna process at the level of undergraduate education is assumed to lead to fewer degrees and a greater uniformity between the different higher education institutions. It is only at the level of postgraduate education and research that the Bologna process will have any chance to offer possibilities for interdisciplinary work.

In the French system of higher education, however, it is more probable that the implementation of the Bologna process will affect the system in a more flexible direction. The French higher education institutions have been invited to work on an in-depth reform of their degree programmes, in order to provide a set of coherent flexible learning paths in fields of study. In this way, the reform introduces a new

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<sup>23</sup> Or rather *was* a promising fact. The authors of the comparative report are less optimistic today about the possible impact of the Bologna process to enhance interdisciplinarity. The money allocated was planning money. 90% of all work to establish Masters programs has been done without additional funding (e-mail correspondence with Professor Silius, 21 April 2005).

logic to the French higher education sector and should lead to significant course development. It also changes the decision-making process regarding the disciplines. Bearing this in mind, the higher education institutions should gain more autonomy, a circumstance that may support the establishment of interdisciplinary teaching and research in the French system of higher education.

## 2.4 Summary

- Ministerial policies in all countries are more or less positively disposed to interdisciplinarity and to the breaking of disciplinary barriers. However, this is seldom followed by changes in the system of higher education. In many national contexts funding procedures and assessment exercises are still carried out according to disciplines – a fact that creates major difficulties for the establishment of interdisciplinarity. This positive ministerial attitude is therefore viewed as ‘lip service’ and empty rhetoric.
- The demand for successful student recruitment as a prerequisite for funding is an obstacle for introducing interdisciplinary fields of study.
- The existence of central decision-making bodies, structured along disciplinary lines, is a major obstacle to interdisciplinary bottom-up initiatives and preserves a strictly codified disciplinary structure in the system of higher education.
- Many higher education institutions have non-flexible administrative organisations, as for instance when it comes to the internal distribution of money, something that causes a lack of academic staff for teaching interdisciplinary courses or programmes.
- The implementation of the Bologna process in the national contexts has, thus far, both constrained and supported the establishment of interdisciplinarity. The codification of the humanities and social sciences as distinct areas has sharpened disciplinary barriers. And the lack of additional money for the Masters degree has made it difficult to create innovative changes. The promotion of mobility is, however, identified as having the potential, in some of the national contexts, of creating a more flexible system. And where there is additional funding for the establishment of new degrees, this is understood as promising for the establishment of interdisciplinarity.
- The different attitudes to various kinds of interdisciplinarity disqualify some forms of interdisciplinarity, while supporting other forms. This for instance is the case when problem-oriented interdisciplinarity is supported financially by the government, while other forms of interdisciplinarity are not given any allocation.
- The lack of internal distinctions between different forms of interdisciplinarity, i.e. more precisely between different forms of crossing disciplinary boundaries in the ministerial and/or fiscal documents contribute to the limiting, but widespread, view on interdisciplinary education as similar to vocational training or of interdisciplinary research as similar to applied science.

### 3.0 Strategic level: research funding and evaluation procedures and their impact on interdisciplinarity

**Table 3: Main funding bodies for the social sciences and humanities**

Nation	Social Sciences	Humanities	Both social sciences and humanities
Finland			<ul style="list-style-type: none"> <li>The Academy of Finland</li> </ul>
France			<ul style="list-style-type: none"> <li>CNRS (Centre national de la recherche scientifique)</li> </ul>
Germany			<ul style="list-style-type: none"> <li>DFG (Deutsche Forschungsgemeinschaft)</li> <li>The private Volkswagen Found.</li> </ul>
Hungary	<ul style="list-style-type: none"> <li>OKTK (National Priorities for Social Science Research Fund)</li> <li>The private Soros Foundation</li> </ul>		<ul style="list-style-type: none"> <li>OTKA (The Hungarian Scientific Research Fund)</li> <li>Other state-funded research institutes</li> <li>Individual research</li> <li>Non-state funded research institutes</li> </ul>
Norway			<ul style="list-style-type: none"> <li>The Research Council of Norway</li> </ul>
Spain			<ul style="list-style-type: none"> <li>CSIC (Higher Council for Scientific Research)</li> </ul>
Sweden	<ul style="list-style-type: none"> <li>FAS (Council for Working Life and Social Research)</li> </ul>		<ul style="list-style-type: none"> <li>VR (the Swedish Research Council)</li> <li>The private RJ (the Bank of Sweden Tercentenary Foundation)</li> </ul>
UK	ESRC (Economic and Social Research Council)	AHRC (Arts and Humanities Research Council)	<ul style="list-style-type: none"> <li>The British Academy</li> </ul>

Irrespective of the fact that some funding bodies are divided into specific disciplinary categories or, as is more usual, cover both areas, difficulties arise for researchers with interdisciplinary projects. Among other things, the national reports point to the need for qualified interdisciplinary evaluation committees. In this section, we intend to

describe the disciplinary territories within the research councils and discuss the occurrence of organisational re-structuring done in an effort to enhance possibilities for interdisciplinary research. We are also going to look at the internal organisation of the evaluation agencies, as well as their guidelines for their assessment exercises.

### 3.1 Funding bodies

As shown in Table 3, in the various European countries there is a preponderance of funding bodies that cover both the social sciences and the humanities. Often, these funding bodies have an explicit intention to provide funding for both disciplinary and interdisciplinary research. One obstacle attached to this funding model is the composition of the evaluation panels, which often seem to be 'discipline-biased'. Considering the importance of funding issues, this is a major disadvantage for the establishment of interdisciplinary research.

In the Finnish, Swedish and Hungarian funding systems, for instance, the evaluation panels are based on disciplinary qualifications. At this point, the Swedish funding system constitutes a clear example of the difficulties of integrating interdisciplinarity within the ordinary funding council. In 2001, the Swedish funding system was restructured, explicitly intended to facilitate interdisciplinary research. Among other things, the re-structuring resulted in the ending of approximately ten smaller research councils, one of which was an interdisciplinary research council, and in the establishment of three main research councils: the FAS mainly directed towards research within social sciences, the FORMAS for both disciplinary and interdisciplinary research in the areas of environment, agricultural sciences and spatial planning, and the VR, responsible for research within all disciplines, as well as all kinds of interdisciplinary research.<sup>24</sup>

According to VR's latest strategic plan, they recognize the importance of interdisciplinarity and want to enhance the establishment of interdisciplinary research. Nevertheless, the whole application procedure, from filling in the application form to the constitution of evaluation panels follows disciplinary lines. The lack of a qualified assessment procedure is only one of the severe difficulties that arise for researchers with interdisciplinary research projects (Holm and Liinason 2005: 23-4)

Another obstacle to interdisciplinary research is the governmental steering of the funding bodies, for example in the Spanish context. Here, it is the framework plans, the National R&D&I plans, that establish priority themes, outside of which it is impossible to obtain funding. Out of 29 priority themes, only 2 fall under the category humanities and social sciences, with an evident weight towards applied and profit-rendering research (Carrera Suarez et al 2005: 20)

In the UK, the division between the two funding bodies AHRC and ESRC is identified as a problem for researchers with interdisciplinary projects. In the joint description of their respective domains, a kind of disciplinary territory is identified, where the risk of falling 'between' the specific domains claimed by respective councils constitutes a severe obstacle for researchers with interdisciplinary projects (Griffin et al 2005: 21).

In Norway, there has been a change of focus from disciplines to topics and the general rule is that money is no longer awarded to individuals or small projects, but to

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<sup>24</sup> The private Bank of Sweden Tercentenary Foundation does still exist and handles applications from the humanities and the social sciences, as well as interdisciplinary applications.

large projects and research environments. This is a change that is identified as supportive of the production of interdisciplinary research in Norway. This is visible in the Swedish context as well, via the Swedish Research Council's promotion of strong research environments (Widerberg et al 2005: 28-9; Holm and Liinason 2005: 38).

In nearly all national contexts, there seems to exist a strong emphasis on instrumental interdisciplinary research as a form of applied science. In Spain, Sweden, Germany and Norway, just to mention some of the nations where this can be observed, there is an emphasis of applied science, emanating from the research councils. This is often identified as a result of the implementation of the Bologna process and its emphasis on mobility and education for the civil society and the labour market. These new conditions will be further discussed in section 5 below.

### **3.2 Evaluation/assessment agencies**

In the wake of the implementation of the Bologna process and similar educational reforms, such as the Quality Reform in Norway, emphasis has been laid on the introduction of assessment exercises. These are often tied tightly to both the government and the funding bodies, and affect the possibilities for individual researchers, as well as for individual higher education institutions, to receive research funding or governmental grants. Moreover, they are often carried out by discipline, which is a major obstacle to all kinds of interdisciplinary teaching and research.

The strict disciplinary system in the UK is maintained by the funding councils and the evaluation agencies. This makes the system of higher education in the UK, despite its autonomy, a system with large similarities with the organisational structures of centrally controlled university systems such as Spain, France and to some extent also Hungary.<sup>25</sup> Here, we discuss the system of assessment exercises in the UK as an example of the impossibility for individual researchers and for individual higher education institutions to opt out of the disciplinary system of assessment exercises

Within undergraduate education, the UK has the so-called Teaching Quality Assessment, the TQA. It is an assessment exercise carried out by discipline, with a certain number of disciplines being scrutinized per cycle. Consequently, the TQA only assesses disciplines that are recognized as disciplines by the funding councils. The RAE too establishes a concentration on the individual researcher, working in one distinct discipline. This is a major obstacle to all interdisciplinary or cross-disciplinary work – an obstacle that affects the establishment of interdisciplinarity within both education and research (Griffin et al 2005: 22).

Likewise in the Finnish, Swedish, German and Norwegian system, the assessment exercises are carried out by discipline in one or another aspect. Swedish education programmes and subjects are quality-assessed every sixth year by the National Agency for Higher Education, and quality assessments in the sphere of research funding are handled by the Swedish Research Council (Holm and Liinason (2005: 20). In the Finnish and Swedish evaluation procedure discipline-based

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<sup>25</sup> The Spanish assessment exercise is conducted by the disciplinarily structured National Agency for Evaluation and Prospective, the ANEP (Carrera Suarez et al 2005: 23). The French assessment exercise is conducted by the National Committee of Scientific Research (CN), integrated in the National Centre for Scientific Research, the CNRS, organized along disciplinary lines (Le Feuvre and Metso 2005: 5, 26). The Hungarian assessment agency is the Hungarian Accreditation Committee, the HAC, an influential and discipline-based agency (Jakab et al 2005: 7).

evaluation panels are identified. Moreover, the fact that the Finnish funding system is dependent on ‘management by result’ makes it difficult to establish new, interdisciplinary research and study programmes (Keskinen and Silius 2005: 6). In the German system of higher education, researchers from interdisciplinary centres face the dilemma of being asked to classify their research (Krebs et al 2005: 49).

**In the Norwegian higher education system, the Norwegian Agency for Quality Assurance in Education (NOKUT) evaluates and accredits all higher education institutions without being tied to disciplinary structures. The fact that NOKUT, commissioned by the government, is also in charge of quality assurance strengthens the bond between the state and the different institutions of education. However, NOKUT provide a quality standard system for the faculties, departments and/or units and do not pay any attention to disciplinary conditions or circumstances. Considering the Norwegian Research Councils model of large-scale research projects, as well as interdisciplinarity within both under- and postgraduate education, NOKUT’s standard system will presumably not result in any strengthening of the disciplinary borders (Widerberg et al 2005: 23, 29).**

### 2.3 Summary

- Many funding bodies that cover a range of both disciplinary and interdisciplinary research are disciplinarily organised. Disciplinary application forms and disciplinarily composed evaluation panels create obstacles for researchers with interdisciplinary projects.
- Funding bodies that cover only one disciplinary field, as for instance the social sciences, have a tendency to establish disciplinary territories, which create obstacles for interdisciplinary projects that may fall in between the disciplinary domains claimed by different funding agencies.
- An emphasis on large-scale and collaborative research projects is identified as productive for interdisciplinary research.
- Collaboration between funding bodies and assessment agencies, where a high rating in the evaluation exercises is crucial for funding, preserves a non-flexible, conservative system.
- Disciplinarily structured evaluation agencies and their likewise disciplinarily designed assessment exercises make it difficult for interdisciplinary fields of study to be recognized. Moreover, they squeeze researchers and students into a disciplinary track.

#### 4.0 Operational level: interdisciplinarity at the level of higher education institutions

**Table 4: Occurrence of interdisciplinarity at different educational and research levels<sup>26</sup> in eight European countries, 2005.**

Nation	BA	MA	PhD	Research level
Finland	Yes	Yes	Yes	Yes
France	No	Yes <sup>27</sup>	Yes	Yes
Germany	Yes	Yes	Yes	Yes
Hungary	No	Yes	Yes	Yes
Norway	Yes	Yes	Yes	Yes
Spain	No	No	Yes	Yes
Sweden	Yes	Yes	Yes	Yes
UK	Some	Yes	Yes	Yes

##### 3.1 At undergraduate level

In many European countries, interdisciplinarity in education does not receive as much attention as interdisciplinarity in research. Generally, the more or less implicit idea is that disciplinary training is necessary at undergraduate level, while inter- or multidisciplinary is appropriate at higher levels. Moreover, there is less promotion of interdisciplinary study courses or programmes and less factual possibilities for interdisciplinary work at undergraduate level than at postgraduate level.

The system of pre-university education is in many of the European countries drawn along disciplinary lines, with few, if any, interdisciplinary subjects and they have high demands on early specialization. As shown in section 2 of this report, this is a large difficulty for the establishment of new interdisciplinary subjects within higher education. Although, as shown in Table 4, interdisciplinary courses and/or programmes do exist at undergraduate level in some national contexts, there are hardly any true possibilities for interdisciplinarity before Masters or PhD level.<sup>28</sup>

Nevertheless there are, among others, two specific examples of national reorganizations that have enabled the establishment of interdisciplinarity at undergraduate level. The first example is the introduction of ‘modularity’ in the UK system of higher education, where an establishment of certain interdisciplinary

<sup>26</sup> Table 4 is an indicator of the main structure within national systems of higher education, with an aim to point out the increasing opportunities for interdisciplinarity at postgraduate level. It is, however, possible that there exists interdisciplinary undergraduate education within a certain country in the table identified as non-interdisciplinary. But such an occurrence of interdisciplinarity at undergraduate level is viewed as an exception from the ordinary system in the national context.

<sup>27</sup> If interpreted as multidisciplinary.

<sup>28</sup> In the Swedish and Finnish educational systems, there are multidisciplinary courses and programmes at undergraduate level and interdisciplinary courses in the Norwegian system of higher education.

courses was seen as a very effective way of enabling interdisciplinarity within the otherwise strictly disciplinary system of higher education (Griffin et al 2005: 36, 62). Secondly, the establishment of formal structures that push the students towards interdisciplinarity in the Norwegian system of higher education is seen as promoting interdisciplinarity, not least alongside the fact that there exist a relatively large number of interdisciplinary programmes at undergraduate level to choose from (Widerberg et al 2005: 48)

Along with the implementation of the Bologna process, however, some of the systems of higher education are manifesting increased uniformity in the degree system, an obstacle to interdisciplinarity. In Germany, for instance, the new BA degree is described as more prescriptive than the earlier degree, a fact that is seen to restrain flexibility and interdisciplinarity.

In sum, there are few examples of true interdisciplinarity at undergraduate level in these university contexts. When it occurs, it is mainly interpreted as a result of the efforts of individual academics.

### **3.2 At postgraduate and research level**

As identified in all national contexts, the greatest opportunities for interdisciplinarity occur at postgraduate level. However, the individual academic's supply of time and money are significant factors when it comes to actual interdisciplinary activities, an important observation made in many of the national reports.

Alongside the implementation of the Bologna process, however, the establishment of an interdisciplinary Masters degree is stressed in many national contexts, as well as the advantage of interdisciplinarity within research. In the Spanish context, for instance, the need for harmonization with Europe (although interpreted as internationalization rather than as interdisciplinarity) is observed as a major factor in the discussion of interdisciplinarity (Carrera Suarez et al 2005: 37).

Moreover, in many of the national contexts, multi- or interdisciplinary doctoral schools are established, often as a result of the implementation of the Bologna process and its promotion of mobility within the system of higher education (see for instance Le Feuvre and Metso 2005: 50, Jakab et al 2005: 58, Holm and Liinason 2005: 36).

In the Norwegian system of higher education, interdisciplinarity is quite common in the area of research. Generally, Norwegian researchers organise their work along themes, comprised of people from different disciplines. Simultaneously, it is necessary to recall the conservative administrative organisation of the system of higher education in Norway, discussed earlier, where teaching staff capacities and paradigmatic barriers were identified as preservative and as rendering interdisciplinary collaboration difficult.

It is possible to understand some of the changes following the implementation of the Bologna reform as supportive of interdisciplinarity, although there still exists large discrepancies between ministerial policy rhetoric and actual effects in the system of higher education. This political unwillingness to change the system establishes difficulties for interdisciplinarity, where funding, evaluation and administrative issues are identified as the main hindrances in the various European countries.

### 3.3 Internal organisation

When looking at how disciplines are organized into faculties, local variation exists in most of the national contexts. This is at least the case for the systems of higher education in the UK, Finland, Germany, Hungary, Norway and Sweden.

The diversified disciplinary structures reflect the autonomy of the different higher education institutions, where internal matters specific to the institution, such as allocation of funding, administration and organisation, are crucial for the location of the different disciplines. This allows in theory potential for interdisciplinarity but seldom in practice. Such local variation in disciplinary structures is by no means a clear indicator of possibilities for interdisciplinary work. One of the main hindrances for interdisciplinarity in an autonomously managed system of higher education, identified in the national contexts, is the diversified internal organisation within each institution of higher education that creates barriers between disciplines, with negative effects for the supply of e.g. teaching staff.

In a few of the countries studied here, there exist national classifications of disciplines. In the Hungarian system of higher education, university degree programmes are disciplinarily codified in a ministerial policy paper (the Higher Education Act 1993). These are, however, not followed by the higher education institutions, which locate disciplines on an economical, practical and administrative basis (Jakab et al 2005: 18).

In the Swedish system, the four nationally accredited scientific areas in general create barriers to interdisciplinarity between these four areas. It is, however, not unusual for the individual higher education institutions to create their own divisions between disciplines, a procedure that renders further difficulties for interdisciplinary teaching and research (Holm and Linnason 2005: 6).

In the systems of higher education in Spain and France, uniformity with few local variations is observed in the location of disciplines in faculties. Although some interdisciplinary teaching exists in these countries, there is a widespread emphasis on early specialization. In postgraduate education and research, however, this emphasis has been abolished (Carrera Suarez et al 2005: 33). But, as observed in the Spanish national report, even though programmes are allowed to be interdisciplinary, the PhD thesis must be registered and submitted in a discipline-based department which in practice restrains the possibilities for interdisciplinary work at the level of PhD and research.

### 3.1 Summary

Although a few instances of interdisciplinary teaching at undergraduate level exist, interdisciplinarity is most often found in postgraduate education and research. Two of the major obstacles to interdisciplinarity are the respective evaluations/assessments performed by funding bodies and assessment agencies. But it is also clear that a third obstacle is represented by the administrative organisation within individual higher education institutions, which creates a lack of flexibility and produces hindrances to the establishment of interdisciplinarity.

- An emphasis on early specialization in pre-university education creates obstacles for the establishment of interdisciplinary fields of study in higher education.
- The lack of interdisciplinary courses or programmes at undergraduate level constrains the establishment of interdisciplinarity at under- as well as postgraduate level.

- An emphasis on interdisciplinarity at Masters and PhD level provides opportunities for interdisciplinary fields of study to be established at postgraduate level. If, however, the PhD thesis must be submitted in a recognized, i.e. disciplinary, department this is a factor that further constrains the possibilities for interdisciplinarity at PhD and research level.
- The great diversity of administrative systems in higher education institutions may also produce serious difficulties for interdisciplinarity within all levels of higher education. Seeing that interdisciplinarity often occurs as the result of the efforts of individual academics, the administrative organisation in combination with the increasing lack of time and money, may affect the possibilities of establishing interdisciplinarity negatively.

## 4.0 Epistemological perspectives on the construction of interdisciplinarity

In this section, we focus some epistemological issues identified in the national reports. First, we discuss the division between hard/soft science, identified in the national reports as an even stronger division than the divide between the social sciences and humanities. Secondly, we discuss the seemingly contradictory emphases on specialized/generalized knowledge, observed in the national reports.

### 4.1 Hard/soft science

When it comes to epistemological perspectives on the construction of interdisciplinarity, a difference exists between countries with a close connection between science and politics, such as Norway for instance, and countries with a sharp division between science and society, such as France, for example. This is understood as one major disparity in the different national contexts, with consequences for the understanding of interdisciplinarity in the higher education institutions, as well as in the national debates.

In Norway, the problem-oriented perspective has established a kind of ‘undogmatic gaze’, where the topic and not the discipline is seen as the starting point (Widerberg et al 2005: 5-6). This is, consequently, an attitude that on the one hand facilitates the establishment of interdisciplinary study programmes and research. On the other hand it stresses the capacity of science to be a problem solver, while developing an instrumental rather than a cognitive interdisciplinarity.

In France, however, the knowledge construction in the social sciences and humanities is not articulated in terms of collaboration with the public authorities or oriented towards problem-solving. Thus, the need for interdisciplinary approaches able to provide practical solutions to social problems is not seen as central or even as necessary for the development of knowledge (Le Feuvre and Metso 2005: 46). This provides two interesting perspectives on interdisciplinary knowledge-seeking methods. On the one hand, the clear division between science and society creates possibilities for a cognitive interdisciplinarity, scrutinizing for instance theoretical and methodological approaches. On the other hand, the absence of applicability may render obstacles to interdisciplinarity in terms of suspicion against instrumental interdisciplinarity, or a disqualification of the scientific quality of interdisciplinary research.<sup>29</sup>

In many European countries, the ‘Norwegian’ type of connection between interdisciplinarity and applied science can be observed. In Spain and Sweden, for instance, there is an evident weight towards the applied and profit-rendering side of the social sciences and humanities. This emphasis on instrumental interdisciplinarity is, however, mainly motivated in terms of developing international competitiveness in the ministerial documents of the different countries.

In Sweden, organisational changes in 2001 introduced a simplification of the establishment of applied sciences. By then, the introduction of nine research foundations took place, commissioned to collaborate with trade and industry, with a certain focus on interdisciplinarity within the frame of applied science. Another

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<sup>29</sup> Some changes have, nevertheless, occurred in the knowledge construction process in France in recent years. Universities are producing more and more applied research and vocational training, partly as an effect of the implementation of the Bologna process (Le Feuvre and Metso 2005: 48).

example from the Swedish context is the task given individual higher education institutions to collaborate with local trade and industry. Many new universities and university colleges in Sweden depend on this governmental demand, which has made this claim a condition for the allocation of governmental funding (Holm and Liinason 2005: 23).

The traditional academic community does not accept such policies or what may be called ‘instrumentality’ without protest. There is an ongoing debate in the media and other public or academic channels in many European countries on the division between the so called hard and soft sciences, i.e. the natural sciences and technology on the one hand and the social sciences and humanities on the other. One reason given for this division is the difference of disciplines in terms of their nature, where the social sciences and humanities tend to be more locally and regionally situated than the natural sciences (Jakab et al 2005: 19). Furthermore, the Bologna process, with its policy-generated emphasis on international competitiveness, education for the needs of civil society and the labour market, mobility within teaching and research and the encouraging of applicability within research, as discussed earlier, is also mainly associated with interdisciplinarity between the hard and soft sciences.

The policy-driven view in the research political debate and in ministerial documents emphasizes the importance of giving the so-called ‘soft sciences’ an international currency, something that is mainly being implemented through support of interdisciplinary collaboration between soft and hard sciences. The ministerial policies and their widespread tendency to connect researchers from the soft sciences and hard sciences in the field of applied science can thus be seen as an attempt to live up to the strong claim to international competitiveness. In this context, interdisciplinarity is used as a way to produce swift solutions to problems in modern societies – tasks furthermore demanded by the European Union.

This higher education policy produces on the one hand consequences of epistemological character for the establishment of interdisciplinary teaching and research, with pedagogical, theoretical and methodological effects, as for instance the question on whether this kind of research demand specialized or generalized competence, which we discuss below.

On the other hand, if a debate on the topic ‘interdisciplinarity’ arises, it may push the epistemological boundaries of the social sciences and humanities further, and perhaps develop our epistemological and ontological points of departure. This can result in new forms of interdisciplinary collaboration, as was the case in the system of higher education in the UK and the USA, where researchers in the social sciences and humanities approached the hard sciences and produced critiques and interventions on the social and cultural meanings of technological changes (Griffin et al 2005: 49).

## **4.2 Specialized/generalized knowledge**

In many countries a parallel, and sometimes contradictory, emphasis is placed on specialized as well as generalized qualifications. This is understood as a way to comply with the demands of modern society and the international labour market, where abilities to cooperate and work in teams are seen as something valuable and important (Widerberg et al 2005: 48). The emphasis on education for the labour market is noted in many national contexts, although it has been differently accommodated in the different university systems.

The adaptation of under- and postgraduate education to civil society and the labour market is often implemented as an effect of the Bologna process. In Hungary,

for instance, before the establishment of a new discipline, there is an explicit demand to identify a recognized career structure, i.e. job opportunities or possibilities for an academic career (Jakab et al 2005: 29). Interdisciplinarity within undergraduate education is in this context, consequently, viewed as a way to adapt the higher education institutions and their training programmes to the current demands of the labour market. The public debates surrounding interdisciplinarity in higher education often refer to the creation of new vocational degrees.

In many university contexts, the public debates and the understandings of generalized in contrast to specialized knowledge is limited to the question of vocational training/education for the labour market – a fact that may facilitate the establishment of interdisciplinary courses at undergraduate level, although designed to fit the demands of the labour market. There is, however, a wide-spread governmental mistrust in the advantages of interdisciplinarity at undergraduate level. With respect to the focus on applied science, and the new emphasis on education for the labour market, specialization is viewed as a necessary condition for different forms of interdisciplinary collaboration. This will, however, strengthen instrumental interdisciplinarity, at the expense of cognitive forms of interdisciplinarity, as was shown in the debate in Germany (see section 2.0 in this report).

One consequence of this gap between different views of interdisciplinarity – and the assumed consequences for the students – can be illustrated by two conflicting views of interdisciplinarity within education. The first view claims that interdisciplinarity within undergraduate education only gives the student a superficial competence and the other suggests that interdisciplinarity at that level gives the student a critical consciousness and methodological flexibility (Rothstein, 2004; Pryse 1998: 17; Pryse 2000: 114).

The gap between these views is wide - both are held by radicals as well as conservatives and are thus quite difficult to bridge. The lack of definition of interdisciplinarity in ministerial policies may be one reason why this gap continues to grow. Another is the governmental push for an instrumental interdisciplinarity within the framework of applied science. This emphasis constitutes a main obstacle for the establishment of interdisciplinarity within undergraduate education as a critical and reflexive scientific inquiry with high claims to deep theoretical and methodological skills.

### 4.3 Summary

- The emphasis on education for the needs of civil society and the labour market produces a view of interdisciplinary in education as similar to vocational training, a fact that may both constrain and support interdisciplinary fields of education and research.
- An epistemological indistinctness and a connection drawn between interdisciplinarity and applied science limit the range for interdisciplinary collaboration in education, as well as interdisciplinary research projects, not least on account of funding issues.

## 5.0 Conclusion

In spite of the widespread proclamation of interdisciplinarity in ministerial policies, there still exist major obstacles to the establishment of new interdisciplinary fields of study in education and research, as discussed in this report.

The main hindrances for the establishment of interdisciplinarity proper, not only multidisciplinary, within higher education and research are:

- A disciplinary structure in the funding bodies where application procedures, preparation committees, as well as the allocation of money to individual higher education institutions, are carried out by discipline. This creates difficulties for individual researchers with interdisciplinary research projects, as well as for the establishment and survival of interdisciplinary fields of study.
- The assessment agencies, with their disciplinary structures and evaluation procedures, are carried out by discipline. In many national contexts, only recognized disciplines have the right to be assessed and these assessment procedures are carried out by disciplinarily constituted expert panels. Since high ratings in the evaluation exercises are crucial for funding, this is a major obstacle for the establishment of new, interdisciplinary fields of study.
- The lack of flexibility in the administrative organisation at individual higher education institutions. This is a major obstacle for the establishment of interdisciplinary programmes and courses, with negative effects on possibilities for recruitment of teaching staff and students.
- The epistemological indistinctness that promotes some forms of interdisciplinarity, i.e. instrumental interdisciplinarity, while constraining other forms, i.e. cognitive interdisciplinarity, creates difficulties for re-organization with an aim of general support for interdisciplinarity in the system of higher education.
- The conceptual indistinctness that does not distinguish between different forms of crossing disciplinary boundaries may treat multidisciplinary on a par with interdisciplinarity proper without really challenging naturalized views of disciplinarity as such in favour of trans- or postdisciplinarity motivated by cognitive, not just instrumental reasons.

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