CHAPTER 8

Opening up Departments

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INTRODUCTION

"Traditional disciplines... impose constraints on broader inquiry. Strong departments, for all their benefit—may restrict the aims and limit the scope of critical investigation." These wise words are taken from the Glion Declaration (1998). The division into faculties, departments and disciplines is not God-given, and as Hans van Ginkel has pointed out, life is not divided into disciplines. If the universities wish to contribute to the development of society—which most universities expressly state that they do—they have to deal with the major societal issues. And all the great challenges that the world now faces, like sustainable growth, migration and refugee problems, provision of health care, the inequality of North and South, globalisation, big-city problems, make it necessary to have an interdisciplinary and/or multidisciplinary approach in the analysis of problems and issues, in teaching and research, and in working life.

Further, new developments, either in the society or in research, may lead to the formation of new subjects across the boundary of two existing subjects, or lead to new definitions of borderlines within a discipline or between disciplines. An example of formation of a new subject is molecular biology, which was created between genetics and biochemistry, but also involving physics and chemistry. Thirty years ago, it did not exist; now it is a well-established discipline, with its own methodologies, journals, scientific societies, etc. The new discipline can then be said to be the result of cross-disciplinary research and co-operation. In Norway, we talk about the so-called hyphen-disciplines, like socio-biology or bio-informatics, which are now emerging in steadily

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growing numbers. After a while, when the new discipline is firmly established, the hyphen will probably disappear.

An example of traditional borderlines becoming less meaningful is the main border between public and private law—formerly considered almost as an iron curtain in European law. This borderline is now less clear, and somewhere practically disappearing. Public law principles, which often originate even from international organisations, play a part in the framework and evaluation of business contracts, whereas public entities more and more seek to promote their aims by use of agreements in the market instead of official directives.

Steven Chu (2000), a Nobel laureate in physics, noted recently: "Our strength and our weakness is the departmental structure. The department is the guardian of its field. It trains students and promotes intellectual excellence. But the departmental structure means that we must carve up all intellectual pursuits into quasi-well-defined segments". Many of the recent reforms, new research and study programmes and new interdisciplinary projects demonstrate, in my opinion, that the disciplines and faculties are not always perceived as a straitjacket. More often, it will be budget restrictions that are the main obstacle.

The organisations into departments or faculties will vary from institution to institution, and from nation to nation (the concepts in themselves do not have the same meaning in the different countries); they are more or less constructions that at particular times have appeared functional to the individual institution. Consequently, I will not in this chapter restrict myself to the opening up of departments; my theme is opening up traditional boundaries, be it boundaries between disciplines, departments or faculties. The theme has relevance both for research and teaching, and I will first look at the research, before discussing the content of the study programmes.

RESEARCH

In research universities, research is the basis of the teaching. Traditionally, it has been the teaching that has decided the main structure of the university, not research. The division into faculties was linked to the professional (vocational) studies, like medicine, law or theology. The modern research university emerged in the latter part of the nineteenth century (Wittrock, 1993). But as research gained importance and was becoming equal with teaching, it was the researchers who decided the curriculum inside each discipline. What should be taught was—and still is—to a great extent determined by the interest of each faculty member, and sometimes quite specialised interests. So if the research is primarily monodisciplinary, there will also be primarily monodisciplinary curricula and teaching.

Research across existing disciplinary boundaries can be conducted in different ways, either by a team of researchers from different disciplines or by a single researcher who has knowledge or training in two or more disciplines. It will often involve several people from different disciplines working in parallel, with more or less interaction between them. Sometimes it involves very close interaction, where the boundaries between disciplines are crossed and a new understanding developed. It is common to distinguish between three types of research involving several disciplines. These definitions were introduced by the OECD in 1972:

- Multidisciplinary research: research where there is autonomy of the different disciplines, and where the research does not lead to changes in the existing disciplinary and theoretical structures.
- Interdisciplinary research: research which involves formulation of a uniform, discipline-transcending terminology or common methodology; co-operation within a common framework shared by the disciplines involved.
- Transdisciplinary (or cross-disciplinary) research: research based on a common theoretical understanding and accompanied by a mutual interpretation of disciplinary epistemologies.

Interdisciplinary research is very often used as a common term for all three types of research across the traditional disciplines. The problem with the OECD definition is that it does not offer a term that encompasses all three types. In the following, I will therefore do as has been done by others; I will use the term interdisciplinary research to refer to all three. When I use interdisciplinary in the restricted sense, I shall place it in inverted commas.

Most research programmes across disciplines will belong to the two first categories: transdisciplinarity research is looked upon as more difficult to obtain. It may sometimes be difficult to decide when the transdisciplinary co-operation has resulted in a new discipline.

Interdisciplinary research is connected with several problems. One problem has been quality and the assessment of quality. There have been many examples of interdisciplinary research that are regarded as superficial and not up to the accepted standard of academic excellence. (One reason for this may be that interdisciplinary research is quite often policy-driven applied research, with expectation of quick results.) But, there have also been examples of interdisciplinary research that has not been assessed in a satisfactory way. This is connected with the general problem of who shall judge the quality of interdisciplinary research, and by what standards. The problem may be that the accepted reviewers of research and publications are likely to come from existing disciplines and find it difficult to assess the standards of interdisciplinary work.

There is still a rather widespread scepticism within the traditional research communities towards interdisciplinary research. It is also a fact that interdisciplinary journals generally have a lower status than the other academic journals, at least initially. The interdisciplinary research and their journals seem to live their own life without the traditional disciplines paying heed to either. An example is area-studies specialists, who to a very limited degree have published in the major journals of political science (Political Science & Politics, 2001). My own experience is that researchers from both law and economics often will be sceptical when other social scientists venture into their fields. They believe, and not always without reason, that people from other fields will not master their methods. One thing that has surprised me is often what seems to be random choice of reference literature, especially when one single researcher is conducting an interdisciplinary project. Some social scientists have the same scepticism towards economists, but partly for other reasons: "They study behaviour, but ignore motivation, conceptualisation and culture. They have an obsession with precision above relevance and realism. ...Economists too often acquire a superiority complex with reference to other social sciences." (McNeill, García-Godos & Gjerdåker, 2001). The scepticism between the natural sciences on the one side, and the social sciences and humanities on the other, will be even more difficult to overcome. Economics will, in many ways, be in between these two cultures.

Interdisciplinary programmes will have a greater chance to succeed if they are built on strong disciplinary research. Consequently, it will usually be desirable for a researcher to train and work in depth inside one single well-established discipline before turning to interdisciplinarity. Only then will he or she obtain the necessary experience in research standards and the reputation as a researcher of high quality. The standing of the involved researchers will of course also in itself have a bearing on the reputation of an interdisciplinary project. We have all seen examples of how an interdisciplinary research or study programme will be more easily accepted when initiated by a researcher of high reputation in one discipline. Having worked in depth with another discipline, a researcher will, however, have developed certain methods and a certain language, and it will often require a great effort to be able to have fruitful co-operation with researchers from another field. Interdisciplinary research is obviously more time consuming than monodisciplinary research. And so far, conducting interdisciplinary research has seldom been an advantage in an academic career, which means that many ambitious and promising researchers will be hesitant of venturing into interdisciplinary projects.

Behind research across disciplines is not only a quest to understand complex societal problems; the aim will usually also be to resolve or contribute to the resolving of such problems. Research across disciplines will often be

aimed more at problem-solving than publishing. It will frequently be part of a large framework program initiated from funding agencies and/or policy-makers, sometimes governments, with the intention to solve special problems. For the researcher in this type of applied research, there will often be a difficult balance between social relevance and academic quality. It seems to be a rather widespread opinion that the results of large programmes initiated by policy-makers have not always be in proportion to the money spent. Probably it has first of all been these types of "interdisciplinary" or multidisciplinary projects that have led to the rather mixed opinions regarding interdisciplinary research. Experience has shown that this type of research will have the best chances to succeed if it is researcher-initiated and based on teamwork between two or more researchers with a firm standing in their own field (Schopf & Hirsch, 2002).

It is a general opinion—at least outside the universities—that the university faculty usually are very loyal to the traditional disciplines, and that although most universities now emphasise—at least in public—the importance of research and teaching across the disciplines, nothing much is happening in this field. There is some truth in this, but there are great variations, from discipline to discipline, and from university to university. Quite a number of universities now organise themselves in a way to encourage interdisciplinary research. Some do this by eliminating the faculties, or having a few very large faculties and instead organising their activities around "themes" (an example is Lindköping University). Virtual solutions make interdisciplinary research possible without changing the organisational structure of the university. Universities like these regard interdisciplinary collaborations as a plus in the academic career.

Almost all European universities now have centres that promote an interdisciplinary or at least a multidisciplinary approach, both in research and teaching, like centres of women studies, of development and the environment, of human rights and so on. Sometimes these centres belong to a faculty, sometimes to a department, and sometimes they exist outside and alongside the faculty structure. There are good reasons for having these types of centres inside the faculties. The "pure" faculties must get used to having interdisciplinary or multidisciplinary activity within their walls. The problem will often be that the universities are building up new units without reforming the traditional ones. These centres have often been met by considerable resistance from the established disciplines, because they will entail draining of both personal resources and budget.

Crossing the discipline border seems appealing to many young researchers and teachers, maybe because the challenges that make interdisciplinary work necessary, are new and exciting. Quite often, though, lack of resources is the

great obstacle when the university leadership wishes to encourage an initiative to start a new interdisciplinary project.

STUDY PROGRAMMES

Teamwork is getting more and more important, both in research and in working life. One reason for this is the enormous cost of some types of research. Genomics, where most scientists work in groups, is an example of this. But it is also because of the great complexity of the problems the world is facing to day. Employers also ask for people who are able to work in teams. Interdisciplinary activities will most often involve teamwork. This must have consequences also for the way students work. It is important that the students acquire the ability to work in teams, also with people from other disciplines. They must be able to make problems and solutions from their own field intelligible to people with another background, and to understand and also to appreciate other methods than their own to approach a problem. These should be basic requirements. It is also an advantage if the students combine two or more disciplines in their study programs, but it should be a requirement that all the students study one discipline in some depth.

A student will normally have a much stricter timetable than a researcher. It is therefore a clear limit to how broad a student can be within a normal university and consequently there will be fewer possibilities of real interdisciplinary study programmes. There is a difficult balance between the wish for breadth and interdisciplinarity on the one side, and the requirement of in-depth and structured studies on the other, especially as regards the Bachelor degree. At the same time, there is a pressure in many countries for shorter studies. One way to include both teamwork and interdisciplinary studies in the Bachelor degree will be to let the students do an interdisciplinary project in their last term. It is my belief, however, that multi- and interdisciplinary teaching is more appropriate at the Master level than for a Bachelor degree. In the undergraduate studies, the intellectual requirements of the rigour of a well established discipline are crucial; provided this has been achieved, there will be more room for interdisciplinary studies in a Master degree.

Many European universities now offer multi- and/or interdiciplinary Master degrees. The European Master degree programs differ considerably in length, profile and purpose. There are degrees for further specialisation, broader competencies, professional preparation or preparation for doctoral studies. Efforts are now being made to achieve a greater coherence in the nomenclature of postgraduate degrees and to distinguish between the different types.

Liberal Arts and professional studies

In most continental European universities, an important dividing line runs between the professional studies that are organised in fixed study routes with built-in academic progression, and the non-professional studies with the so-called liberal arts degrees. The liberal arts degrees are only to a limited extent organised in fixed and organised study routes. They may in some ways be compared with the Bachelor degree in the United States.

Traditionally, there have in most universities been rich opportunities for the students to combine different subjects in a liberal degree. In a faculty of humanities, the students usually may combine different disciplines like history, languages and religious studies. In a faculty of natural sciences, the students study for instance biology, chemistry and physics. Traditionally, the subjects chosen in one degree will all be within one faculty/department (this depends of the definition of departments), and usually the students will move from one institute (department) to another when they start a new subject. The different subjects are in these cases taken in series, and the approach does not imply "interdisciplinary" studies; the degree or study programme will rather be multidisciplinary. There are also many multidisciplinary courses that involve taking two or more subjects in parallel, like, for example, the Cambridge Natural Science Programme. Many European universities now also offer an interfaculty degree, where the students combine subjects from different faculties, for example physics, biology and philosophy, law and languages.

The words "faculty", "department" and "institute" have different meanings in different countries. What in Scandinavia are institutes, will in the U. K. and the U. S. often be departments (like a department of chemistry). Faculties in the U. S. will often be larger entities than in Europe (like the Faculty of Arts and Science at Harvard), and the departments may be compared with the Scandinavian institutes.

The problems inherent with such a flexible, multidisciplinary "cafeteria" model (some are talking about a "boneless" model) are apparent and acknowledged. It has been criticised for atomisation of subject matters and for undermining sequential learning. In the American universities, there will always be defenders of a core curriculum, as we have seen recently at the University of Chicago, where there now will be a reduction of the famous "common core curriculum". "They want to attract not only more students, but less brainy students who will make more money and give it to the university", a professor from the university complains.

A university course shall ensure both academic depth and breath. But, within a limit of three years, this is not easy to combine, and at least it requires a more strict structure than one will find in many lower degree study

programs today. I am aware that the new slogan is "more freedom of choice to the students to set up their own study program." The sense behind such a slogan will of course depend on the actual situation in the different institutions. It is my experience, however, that there is a limit to how much freedom the average student wants, at least the undergraduate student. I have seen from surveys that many students prefer the firm structure they often will get in the state colleges to the bewildering, manifold choices they may meet in the traditional universities. This will of course depend on the maturity and personal aims of the individual student. My answer would be that we should offer the students several choices of structured studies with progression, but also with elective parts. One must try to accommodate both the requirement of progression and intellectual development and the freedom of choice. But for me, the first is more important than the last. One could, however, also have an offer for the atypical students who wish to construct academic paths of their own, with combinations that seem unworldly and purely academic.

Our challenge in the undergraduate studies is to develop in all students a taste for independence and critical thinking. This is not an easy task in a setting with limited money per student, combined with stronger demands for efficiency, relevance and an increasingly diverse student population. And it will not be possible if the student does not study in depth one discipline.

As a rector, it was my goal to make the liberal arts degree more structured, with a progression, core courses and a more restricted choice of electives, and with a mandatory thesis, preferably project-based. In a way, this is a step backwards when it comes to freedom of choice for the students (and some of the students protested against this). For me, the main point in this connection is the progression and intellectual development, preparing students to become independent critics of a discipline. This is not easy to secure with a more or less unregulated system of credit accumulation. It was also a goal to make the students more employable, both after the first and second degree.

There are still in many European universities long study programmes with rather inflexible and monodisciplinary curricula. But several countries have either recently reformed—or are in the process of reforming—their degree structure. In the message from the European universities to their ministers at the Salamanca Convention in 2001, it is stated *inter alia*: "There is a broad agreement that first degrees should require 180 to 240 ECTS points [three to four years] but need to be diverse, leading to employment or mainly prepare for further, postgraduate studies. Under certain circumstances, a university may decide to establish an integrated curriculum leading directly to a Master degree." There is, however, a clear trend in Europe towards a three-year Bachelor.

The professional studies are traditionally integrated studies, with a continuous progression in subsequent, often mandatory courses, and with a more

restricted choice of electives. Sometimes, they also contain a required general education component. These studies are often inflexible, with few possibilities of choosing subjects from other fields. In many countries, there exists a need for more flexibility and freedom of choice.

Traditionally, two of the oldest professional subjects, law and medicine, have been introvert and self-sufficient, closed, not to the society, but to other disciplines. Now the faculties feel a strong pressure to opening up. In a Swedish national evaluation of law studies from 2000, the law faculties are criticised for a low degree of interdisciplinarity, and they are recommended to enlarge their contact with other faculties, and to increase the possibilities for the students to choose non-legal courses. I feel certain that many other European law faculties could meet with the same criticism.

In most European countries, the study of law lasts from five to six years, with medical studies lasting about the same. This is quite different from the system in the U. S., where professional studies like law and medicine start after the bachelor level, and without any special requirements as to the content of the bachelor. The American J.D.s will thus have achieved an all-round, liberal education before they start Law School. This is not the case with the Scandinavian law candidates, and they do not get such education in the Law School (nor at high school, like, for example, French students do.) But, within a framework of five or six years, there should be room for a semester of non-legal studies, like languages, economy, psychology or other fields.

The reorganisation of law studies at the University of Oslo a few years ago illustrates how a professional discipline can be made more open. The main purpose of this reorganisation was to make it easier to combine parts of law studies with other disciplines and studies. The law study now consists of two parts. The first part is divided into two courses of minimum one year each (60 ECTS credits), one in private law and one in public law. Each of these courses may be combined with non-legal subjects as part of an interfaculty degree, a bachelor. It is, for example, quite common to combine the course in public law with courses in political science or economy. The second part of the law study, the professional part, is of minimum three and a half years. Of these, one and a half year is an elective section, where the student can choose among around 30 subjects. Parts of both the mandatory and the elective sections may be taken at universities abroad. The students also get credits for non-legal courses, but only half of the credits of the course in question.

This is an example of a system that makes it possible to combine law with other studies, and I suppose that there are other law schools with similar arrangements. What characterises the system of the Law faculty at the University of Oslo is, however, that we understand well enough that other faculties find it useful to study law, but we do not really encourage our own law students to take non-legal subjects—which I think we should do. Languages,

economy and psychology are examples of subjects that may be very useful to combine with law.

Credit systems and modularisation

A growing number of European higher education systems have adopted systems for the transfer and accumulation of academic credits. This makes opening up much easier. All credit systems are seen as compatible with the European Course Credit Transfer System (ECTS), which is based on student workload. ECTS was developed in the wake of the European Union programmes for co-operation and mobility in higher education. But it will also be an important tool to reform universities' curricula and to facilitate multidisciplinary study programmes.

There are still problems to overcome with credit transfer between systems made up of modules, compared to systems that are organised in integrated studies and continuous academic progression in subsequent, obligatory courses, which have to be followed in more than one semester. There are, however, very few studies where it will be impossible to organise a system of credits, even in the professional studies. It is, for instance, now more and more common with elective parts in this type of studies, and these elective parts can easily be taken in another discipline, at another faculty or another university for that matter. Modularisation is also now introduced in a growing number of universities. In this connection, it should be emphasised that there is a difference between a credit transfer system and modularisation on the one side and an accumulation system on the other. Since it is the university that decides to validate study programmes and award a qualification, credit-based curricula are not incompatible with a structured, progressive study programme.

Restructuring of higher education systems

An example of the reform process we now witness in many European countries—partly based on the Bologna process—is the reform of the Italian higher education system. This system has been quite conservative and inflexible with few possibilities of multi- or interdisciplinary study programmes. The whole education system is now dramatically reformed. The university studies have been changed in the direction of the "Bologna system" with a three-year bachelor degree at the base. One important change is the flexibility, both in the plurality of courses of different length, which can freely be juxtaposed, and in the adoption of the credit system, built upon the ECTS system. These changes will make it easier to offer interdisciplinary study programmes, "elements that are very important in the contemporary world of work" (Modica & Stefani, 2002).

Interdisciplinary study programmes, some examples

There are now all over Europe many examples of innovative thinking in the structure of study programmes, also within traditional structures. There are many reform projects, several of which are built on some type of matrix organisation, with a co-ordination of activities across established structures, and with independent leadership. Here are some examples.

The ESST Master degree is transnational and transdiciplinary. The European Inter-University Association on Society, Science and Technology (ESST) is an association of universities that jointly teach and research in the field of social, scientific and technological developments. Universities from across Europe are members of the association, which is registered as a non-profit making organisation in Belgium. ESST has been running a Masters programme in 'Society, Science and Technology in Europe' since 1994. This degree — "Society, Science and Technology in Europe" — aims to develop informational resources, analytical skills and conceptual frameworks for researchers and students in technological change and innovation. The course is designed to provide post-graduate training for academics of all backgrounds: social scientists, engineers and humanities scholars. The approach is interdisciplinary, based on recent results from studies of science/technology and economy/society. The course aims to apply such research to the social and economic analysis of innovation, to strategic decision-making and management of sciences and (new) technologies, to ethical issues in sciences and technology, and to political and cultural analysis of modern science- and technology-based societies. The teaching of the Masters course is carried out by teachers at the member universities (and by teachers exchanged between the universities) and involves active participation by people from industry and engineering, as well as policy-makers from all over Europe.

An example of a study programme that meets the needs of the new society and therefore appeals to young scholars is the programme Corporate Governance, Contracts and Incentives at the Centre for Business Research, Cambridge University. One current research programme focuses on ethics, globalisation and regulation. It studies the business ethics issues raised by globalisation, the incentives for increasingly large, multi-national firms to be ethical, and the ways in which public policy might be altered to encourage more socially responsible behaviour by businesses—particularly in the developing economies, where bribery and child labour are all too common. This programme brings together researchers from law, economics and management studies.

Interdisciplinary informatics is a transdiciplinary degree at the University of Oslo, where a general course of informatics is combined with a choice of courses from other faculties, like social sciences, law, pedagogy. As regards

informatics in general, it will usually be both a discipline of its own, often with a professional degree, and an important part of other disciplines and degrees.

Economics is, in the same way, becoming a part of several interdisciplinary studies, either forming a new subdivision, as part of a multi-disciplinary program, or in connection with interdisciplinary study programmes. Environmental economics is one example.

Economic analysis of law has expanded dramatically in recent years. Law and economics is especially strong in the United States, but many European law schools also have law and economy courses. At the Law faculty in Oslo, these courses are mandatory. There are several journals of law and economics, and there are law and economic associations in Europe, North America and Latin America. Still, as Richard Posner has pointed out, there are few judges and lawyers who seem to be aware of this scholarship and are using it actively in their practise. And in most European law schools, a very small part of the established faculty members are using law and economics in their scholarship. However, it is interesting to note that that many of the PhD theses in the law faculties these last years have been wholly or partly on law and economic character. The task for these young scholars will now be to convince lawyers and judges that law and economics is an important tool and a useful supplement to traditional law.

The national health services are having great problems in most European countries, with the combination of growing demands and a shortage of resources. Thus, there is a great need for result-oriented leaders with competence in medicine, economy, financial management and modern leadership. A tailor-made bachelor and a master for leaders in the health service is now being established in a few European universities. This is an example of how the universities can meet new needs of the society by a co-operation between the departments.

Human rights is an interdisciplinary and multidisciplinary field, with researchers primarily from law, philosophy, political science and anthropology. Many universities have a Centre of Human Rights. In other universities, human rights are part of the curriculum in the individual faculties with more or less co-operation between the researchers from the different disciplines. It is a field, however, where co-operation between the different milieus is absolutely necessary, and experience shows that it may be very fruitful to combine different academic approaches to problems, and sometimes even establish new structures. In a centre of human rights, the co-operation between the different disciplines will perhaps most often be multidisciplinary, but there are also many examples of real interdisciplinary research. In my opinion, however, it is still to early to consider human rights as subject/discipline of its own. The teaching of human rights will be both monodisciplinary, in the

individual disciplines, like law, philosophy, social science and anthropology, and interdisciplinary in centres or programmes.

CONCLUSION

There is no doubt that in most European countries it is politically correct—among politicians and research foundations and funding agencies, but also among university leaders—to call for more study programmes across the traditional disciplines. A lack of resources and a conservative culture may be a hindrance to achieve this, and in some universities it seems that the institutes and departments have not to a sufficient degree been able to develop new study programmes and courses across disciplines. It is obvious that not all European universities have the required capacity for change. But, in some cases, the scepticism towards all these demands for interdisciplinarity from the funding agencies and political authorities may be sound, especially if it will be achieved at the expense of the necessary basic research in established disciplines.

However, as I have tried to show above, there is more innovative thinking in European universities, both in research and in teaching, than most people seem to be aware of. Many of the new initiatives involve interdisciplinary activities. There are, in almost all the universities, individual leaders who are thinking anew, and there are hundreds of examples of new interdisciplinary study programmes—more or less successful, it might be added.

Some think that ICT will solve all problems, also those that follow from division into disciplines and subjects. George Haddad (2000) writes in an article: "Teaching must quickly integrate the transdisciplinary dimension. Indeed, the compartmentalisation of disciplines made necessary in the 19th and 20th century by needs of progress of knowledge, will quickly give way to a new approach which enables one to grasp what transcends the different disciplines and links them in a common dynamic. The perception of complexity and totality will be made possible through new communication and information technologies."

Few university heads will have such a radical view on the possibilities of the new technology. The new technology has an immense influence in what is happening at the universities at the moment, and it will have an even greater influence in the years to come. But still it is only a tool. Let us not forget our history and our responsibilities: "the university is the trustee of the European humanist tradition." (The fourth fundamental principle of the *Magna Charta Universitatum* of the European universities.)

In contrast to the above quotation from Haddad, I now cite Joseph Bricall, keynote speaker at the Salamanca Convention of Higher Education Institutions in March 2001: "Humanism had a pervasive influence on all disci-

plines, and their teachers. Its dissemination helped universities give a meaning to the unity of knowledge, envisaging different disciplines as part of knowledge taken as a whole. This humanist tradition also needs reintegration into present day reality, if our world is to cope with the fragmentation of specialised demands for studies and research".

The division between disciplines will not always stay the same, and it will sometimes be diffuse, but it will always be a necessary tool in research and teaching. "Academic departments based on disciplinary fields of knowledge will go on being important, their disciplinary competence is essential, too valuable to throw away, and they have much power to protect their own domain." (Clark, 1987). The point is that the disciplines and the departments must not "impose constraints on broader inquiry".

Whether or not the faculties or departments will survive in the future, I do not know. Most likely, they will survive in most institutions, while some already have eliminated them, and others will do the same. The main point is that departments are not enough; the universities need another way to group academic work in order to take care of the interdisciplinary initiatives and activities. Most universities have also in the last decades taken a number of initiatives to organise research activities across the established structures, *inter alia* through the formation of centres of excellence or strategic areas with forms of network organisations.

The strength of a comprehensive university is exactly that it is comprehensive, that it has a breadth of subjects that makes it possible to offer to the students a wide choice of different fields, and a possibility to choose between them, also in combination. "Universities will play a major role, provided they are adaptable organisations and comprehensive institutions rather than highly specialised niche players." (Nuesch, this book). Each researcher and each student must not necessarily be interdisciplinary. But all universities must be both. They must be able to offer to the individual student and to the researcher the possibility of addressing difficult problems in an interdisciplinary way, and to do in-depth disciplinary research and training.

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