



***Choices and Responsibilities:
Higher Education in the Knowledge Society***

Programme on Institutional Management in Higher Education (IMHE)

Theme 1: New Funding and Governance Mechanisms

**New IDEAs for internationalisation within the knowledge
society**

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Introduction

In recent decades, universities increasingly find themselves in the limelight due to internationalisation of higher education, and also due to their knowledge creation. Universities are asked to contribute to the knowledge society on the one hand by creating and producing knowledge and on the other they are expected to educate highly qualified graduates. However, according to Wolf (Wolf 2002) there is no clear relation between high educational level and economic growth:

“...among the most successful economies, there is in fact no clear link between growth and spending on education, let alone between growth and central-government involvement in education planning.”

There may be no clear relation between the educational budget and planning of a country and its economic growth, but surely scientific and technological research play an important rôle in advancing the productivity of a country. Hence, the influence of universities in the higher educational system cannot be neglected because universities are one of the major breeding grounds of research. Actually, Wolf smoothens her first finding and reports on the important rôle of numerical literacy as being highly regarded by the labour market. Indeed, we experience this over the last two decades, for example looking at the extremely wide spectrum of companies employing physicists.

How do universities cope with this variety of rôles? From time immemorial, universities have been active in education and research but recently, universities need to consider new factors in education: internationalisation and the mass higher-education. In principle, internationalisation is a standard part of university life, being part of research activities, whereas the internationalisation of education is more recent. Universities produce graduates who increasingly work in an international world - the global market. Consequently in the 90s, internationalisation in education found its way to the political agenda. Bartell (Bartell 2003) reports that in 1995 the American Council on Education emphasised that all undergraduates require contact with and understanding of other nations, languages and cultures in order to develop the appropriate level of competence to function effectively in the rapidly emerging global environment. In Europe, we saw the introduction of a variety of mobility programmes, e.g. Erasmus/Sokrates and so forth. In addition, the European Council aims at making Europe the “most competitive and dynamic knowledge-based economy in the world” and therefore Europe needs to compete on the international scene producing top-quality graduates.

In Europe, strategic alliances of universities seem to be one of the responses to this growing international competition (van der Wende 2001). Further, Kennedy (Kennedy 2003) claims that a key policy issue of higher-education governance in the 21st century is that

“deliberative partnerships need to be developed that allow for communication, debate and discussion to inform decision-making”.

Following these suggestions it seems sensible to set up a network of universities dealing with the new challenges in higher education and internationalisation. In the IDEA League, an alliance of four leading European technical universities situated in Germany, the Netherlands, Switzerland and the UK (Büttner 2002), we want to learn from each other, exchange best practice and use the partners as a point of reference. This allows for benchmarking and we gain more insight how other institutions, and countries, approach these questions which is especially useful in view of being governed by national bodies that are often virtually unaware of international implications. Firstly, we address how organisational and cultural aspects influence such a strategic collaboration. Then we discuss how the alliance actively promotes collaborations and joint activities. In 2000, we started with comparisons of a variety of study programmes looking into degree structures. From the outset, quality assurance (QA) was another point being considered in the alliance. This falls in line with the subjects currently given high priority in the Berlin Communiqué of September 2003 (Berlin 2003) requesting to take stock of the implementation of the following points of intermediate priority: QA, two-cycle system, recognition of degrees and periods of study. We also discuss how these achievements can be related to industrial collaborations and how we see mobility in the long run.

Organisational culture

In the following we present data that will give us some indications on the differences between these partner universities concerning its international community. Imperial has the highest number of foreign students, this being a consequence of its longstanding recruitment policy of students from abroad. Possibly ETH's and TU Delft's low number of foreign students, with less than 10%, is because they are situated in small countries and less well known, whereas RWTH has just under 20% of foreign students and a similar percentage of foreign doctorate students. However, for ETH and TU Delft the picture changes significantly when looking at the number of foreign doctorate students with ETH having now the highest percentage of foreigners. Actually, at TU Delft and RWTH, the statistics of doctorate students given only provide an indication because they are frequently not registered as students because they are employees.

Table 1:

Some figures of IDEA universities: percentage of foreign (doctorate) students and professors, and yearly income (source: annual reports or web sites of universities).

	Imperial College London (Imperial)	Delft University of Technology (TU Delft)	ETH Zürich (ETH)	RWTH Aachen (RWTH)
Country	UK	The Netherlands	Switzerland	Germany
Number of full-time students in 2002	10,336	13,189	9,570	30,080 (out of these 2/3 are in science, technology and medicine)
Percentage of foreign students	22%; note these are non-EU foreigners	9%	7%	18%
Percentage of doctorate students	29%	5%	20%	8%
Percentage of foreign doctorate students	30%; note these are non-EU foreigners	around 40%	50%	15%
Number of professors in 2003 (in fte)	297 (without medicine)	199	278	306 (without medicine)
Percentage of foreign professors	17%	13%	33% from Germany, 35% other countries	8%
Number of staff in 2003 (in fte)	6,000	4,650	5,900	6,700
Total budget in € in 2003	€85 mln (£390 mln) - for 2001/2	€432 mln	€746 mln (1,119 mln SFr)	€484 mln
Third money stream	19%	16%	14%	30%
Budget year starts in	August	January	January	January

Looking at the professorship, the picture is reversed: with two thirds of foreigners, ETH has by far the highest number. ETH is thus truly international in its professorship but not concerning the first-degree students, whereas Imperial shows small variations in its percentage of foreigners between students, PhD students and professors with professors being the lowest. Does this reflect a difference in the appointment of professors at these four universities? In the quality management working group, we compared the procedures of appointing professors at the four partner universities and perhaps surprisingly we find practices in common:

- Procedures are manifestly international in advertising and recruiting so as to be able to attract highly qualified candidates.
- The selection process includes an assessment of the candidates' potential contribution to teaching. Clearly, each IDEA university has its own mission and there are rather different value-systems and national academic staff-structures for the four partners that play a rôle. For example in the UK, internal promotion to a professorship is much more common than on the European continent. At RWTH, it is practice that professors in engineering subjects come from industry before joining university. In addition, there is the legal requirement for teaching in German, which might considerably limit the number of international candidates. In the case of ETH, we find a special asset with its offer of a dual-career couple service when appointing staff (DFG 2004). Looking at the high number of German professors at ETH there must be some competition between ETH and RWTH in the appointment of professors. Moreover, ETH may profit from its location in a multilingual country when hiring international professors. Despite being situated in the German-speaking region, French, Italian and also English are very common in Zürich, and particularly at ETH. Further, teaching in German is not obligatory; actually ETH is increasingly moving towards teaching in English. This policy has been introduced because ETH specifically intends to recruit more foreign students into its newly developed master programmes. In 1997, TU Delft begun teaching in English and in the frame of its change to the bachelor-master structure introduced English overall in all master programmes. With English being widely spoken in the Netherlands and the number of foreign master and doctorate students on the increase we might expect that this may facilitate hiring of foreigners in the future.

How are these four universities funded? Table 1 shows the overall income and the third money-stream (an expression that is not widely used in the UK). Third money-stream includes income from industry, charities, and EU funding. In our comparison, we see that ETH and TU Delft have the highest percentage of public funding. With 30%, RWTH has the highest third money stream, most likely connected to the substantial recruitment of professors coming from industry. Liefner (Liefner 2003) reports that in the US, private funding is very important in contrast to the European universities in which public funding dominates and private funding is almost negligible. He looks at examples of universities in the Netherlands, Switzerland, the UK and the US. Concerning the allocation of resources, Liefner finds that the US institutions largely allocate resources in a competitive way. In contrast to this in Switzerland, the bulk of the funding is not directly linked to performance and they allocate internally mainly via fixed budgets. Germany's approach is similar to the Swiss public funding and resource allocation, but nevertheless, RWTH generates a considerable amount of its research income through industry and thus must compete for this externally. The Netherlands and the UK's allocation system contains competitive elements, and also internally a market approach is used. Further, Liefner analyses how the resource allocation influences behaviour and discusses what determines the success of a university. He finds that long-term success lies in the quality of the academics, with well-qualified people responding to a greater extent to individual motivation and scientific interests rather than to financial incentives. In addition, the ability to attract highly qualified and motivated students has an impact on the long-term prospects of a university. These two features, top-quality academics and students, are the objectives of the IDEA universities.

Quality assurance (QA)

From the beginning, the IDEA League recognised that QA was an important issue. Fact finding and understanding how each partner dealt with QA and how this is embedded in the national system formed the starting point for discussion. Our analysis enables us to agree on a set of educational quality management principles taking account of the cultural differences and national systems in place

(Büttner 2002). In view of this we now fall in line with the Berlin Communiqué (Berlin 2003), that advocates the importance of QA and asks for co-operation and networking with regard to QA. The Communiqué also states that the primary responsibility for QA lies with each institution itself.

As part of the Bologna process, there have been many surveys on QA in higher education and Billing's paper (Billing 2004 and references therein) provides a good overview of this. Billing reports that examples of the transfer of QA frameworks are rather unsuccessful. A QA culture needs to be developed within an institution taking account of the culture and the local and national constraints given. This is precisely what the alliance did, and thus the establishment of a set of standards based on our differences and commonalities is the basis of our collaboration in QA. But are these educational quality management principles really implemented at each partner? This is regularly an agenda point of the yearly general assembly of the IDEA League, and we find that the principles are indeed almost completely implemented with the exception of one partner who has so far no national QA body and therefore, is running two pilot projects concerning the implementation of QA. Progress of the implementation is monitored via the annual meeting and this showed that QA is still not yet fully alive at each university. Thus, we decided to have a transfer workshop on quality management, essentially a workshop on good practice in education between the four universities. Over the course of one day, people from different disciplines of the four institutions discussed both the successful and unsuccessful practices. Especially, the experience of discussing in a cross-subject environment was found to be very beneficial thanks mainly to openness and mutual trust. Clearly, internal communication of the representatives of the domain-specific groups will be vital to carry this further and make this relationship live. The aim is that colleagues from a partner university regularly become involved in each self study. We continuously need to raise awareness of QA in education and to work on attitude change – in the long run.

Degree structure and qualification profiles

The Bologna declaration and the start of the alliance both took place in the second half of 1999, and so the discussion on degree structure, the introduction of a two-cycle system, was immediately taken up by working groups in the alliance. Especially TU Delft and ETH did not want to be dominated by their governments and chose to become engaged at an early stage. It turned out that the comparison of study programmes with partners from outside the national system was found to be very useful by all involved. Overall, a two-cycle system, as suggested by the Bologna declaration, is only partially in place at the IDEA League universities, see Table 2. At Imperial, there is a mixed degree-system of integrated master courses and a bachelor-master structure. In 2002, TU Delft introduced a bachelor-master structure, whereas ETH decided to spread the implementation over several years, i.e. introducing the bachelor-master structure over all departments fading out the diploma courses at the same time, with the last bachelor being made available in 2005. RWTH has so far introduced few bachelor-master programmes but its state ministry of education is now obliging an overall introduction of bachelor-master programmes in 2006.

Table 2:

Academic structure: degree system and details on academic year (source: annual reports or web sites of universities).

	Imperial College London (Imperial)	Delft University of Technology (TU Delft)	ETH Zürich (ETH)	RWTH Aachen (RWTH)
Degree structure	<ul style="list-style-type: none"> • MEng (4y), • BEng (3y) not in all subjects; • MSci (integrated 4y master study), • BSc (3y and 4y) • specialised MSc courses of 1 year 	<ul style="list-style-type: none"> • BSc (3y, in Dutch) • MSc (2y, in English) 	<ul style="list-style-type: none"> • BSc (3y, in German and English) • MSc (1.5y, in English); all BSc programmes will be in place by 2005 (currently, mixture of Diplom and BSc/MSc structure) 	<ul style="list-style-type: none"> • Diplom (4.5 or 5 y) • BSc (3y) in some cases • MSc (2y) in some cases; (move to BSc/MSc structure as from 2006)
Academic year	early October until end June	early September until end June	mid-October until early July	mid-October until mid-July
Division of academic year	3 terms	2 semesters	2 semesters	2 semesters
Main exam periods	May/June	January and June	March and September/October	not defined for final exams

Where does the QA aspect come into the degree system? The IDEA League educational quality management principles have an outcome-orientated approach to a study programme: we talk about the establishment of a qualification profile of the graduate, i.e. the attributes, competences and skills graduates should have acquired during their degree. A qualification profile has a general and a domain-specific part. By scrutinising study programmes in terms of objectives, content, structure, and so forth, we developed qualification profiles and agreed on minimum requirements between the four partners in a number of subject-specific groups. There is rather wide variation in the manner with which different domains deal with this. Engineering subjects normally showed smaller discrepancies and were somewhat familiar with working out a qualification profile whereas in the natural sciences, the outcome orientation of a study programme is less well accepted. This might be part of the cultural difference of the subject matters with engineering being focussed on finding solution to problems, often in a team, whereas the natural sciences target more the understanding of the matter, in which the individual contribution is paramount.

By establishing these profiles we are able to define the pivot point from bachelor to master. Where a bachelor degree is not (yet) available in a specific area, a certificate of bachelor equivalence is established based on the specification of the qualification profile. At the same time, the outcome profile of the bachelor is the entrance profile for the master. This is in line with the IDEA League's principle of offering courses to master's level as the norm for all graduates of the four universities, but still allowing for mobility. This was endorsed by signing an agreement on convention of titles between the four partner universities and formed the basis of introducing an IDEA scholarship for master programmes. Details on this scholarship will be discussed in the chapter on mobility.

Links to industry

For industry the recruitment of good graduates is of course the major issue. With regard to this the quality management principles with their qualification profiles are very appealing because they provide transparency of the educational system in use at four universities in different countries and the profiles of graduates which can be expected. Frequently, companies target a limited number of universities as part of their recruitment policy and the structure of an alliance offers an efficient mechanism for this.

The establishment of a web site was instrumental in helping the IDEA League partners in its negotiation in establishing an academic-industrial partnership. These companies are players on the global market, and they find it beneficial that graduates have been mobile and gained intercultural experience at an early stage. Moreover, the coverage of the companies' research and manufacturing laboratories fits well with the location of the four universities. A point of mutual interest is internships of students that are profitable for all sides: the company gets a preview of students who be candidates for employment without committing themselves, whereas the educational system of a university frequently requires an internship, especially in engineering subjects. For the students it offers the opportunity to see how a particular company works and they can decide if they wish to pursue a future career in this area. Overall, links are established that can lead to research collaboration between the partners or intensify existing collaborations.

Research collaboration is desirable for both partners, and forces can be joined on the educational side, e.g. the possibility of having people from industry giving lectures in academia. In view of bringing their staff up to date, industry might also be on the lookout of working together with universities. Sponsoring of events, workshops, and so forth are the obvious options. Co-promoting an academic-industrial partnership might attract good students, especially from abroad. To this end, it is clearly desirable to have more scholarships.

Mobility

The Bologna declaration and its follow-up fosters vertical student mobility, which means after completing the first three years of study (bachelor level equivalence) a student can take a master's degree at another university. There are mixed feelings about this for a variety of reasons: a degree of a university has a certain reputation and this being the reason why students have chosen a particular institution. Normally, a university wants to keep its students. Universities might also have financial reasons due to funding based on student numbers or number of degrees awarded. However, promoting vertical student mobility within an alliance should lead to a rather balanced approach and would nevertheless provide opportunities of vertical mobility for students. By signing an agreement on convention of titles between the four partner universities in 2003, the alliance created the basis for an IDEA scholarship for master programmes anticipating that students will begin moving at the beginning of the academic year 2004. Each IDEA university offers three scholarships for one student from each partner university - a total of twelve scholarships, covering tuition fee and contributing to the living cost. Despite being on the forefront of the new educational approach according to Bologna the scholarships do not yet attract enough candidates. In the first round, at RWTH and TU Delft, two candidates applied and there is one student from ETH who wants to move to an IDEA partner. However, as yet there is no candidate from Imperial. A possible reason for the low interest is that the concept that you complete your study by going to two universities is rather new. Another barrier might be that a bachelor-master structure is not yet in place at all four partners. Further, professors may view this concept of vertical student mobility as a risk of losing potential PhD candidates.

From the students' point of view, horizontal mobility - study for a set period in the master phase at a partner university - is favoured to vertical mobility because they will remain enrolled at the 'sending university'. In the US, student exchange is increasingly encouraged: for example Harvard and

Stanford have announced that in future all their graduates will have an overseas study experience (Maslen 2004). Actually, in Europe horizontal student mobility has been applied for a number of years following the introduction of the Erasmus grant programme by the EU, and Switzerland also participates in this. Nevertheless, vertical mobility has the attraction of obtaining degrees from more than one university which students quite rightly consider as an asset for their job prospects. Probably one should consider that studies at a partner university of a longer period, e.g. for more than 6 months, might be of interest for students in view of receiving a joint or perhaps a double degree. However, there are hurdles, amongst others in the national legislation, for joint or multiple degrees which need to be addressed. A report by the European Commission “Trends 2003, Progress Towards the European Higher Education Area” prepared for the European University Association EUA (EUA 2003) shows that the European landscape of European Higher Education Area is rather diverse concerning degree structures, credit systems, quality assurance, accreditation, etc. With students now considering mobility as an important asset of their study experience and mobility playing an important part in internationalisation, the pressure to resolve the problem increases. An additional pressure comes from the EU with the introduction of *Erasmus Mundus* (Erasmus 2004), a funding scheme for setting up joint master-courses by offering funding for the operation and mainly providing scholarships for students from non-EU countries. Essentially, discrepancies need to be settled individually and clearly, the EU intends to foster examples of good practice and cannot address an overall scheme. With regard to using the complementarities of a number of universities, joint courses would be an interesting concept. Efficient use of resources is also a factor supporting this approach. Certainly investment is required during the setting-up stage, but in the long run it liberates more time of staff to do research. With its diversity such a course is attractive for motivated people and the graduates of such a course should be highly qualified for careers in industry. Thus, the future seems to point towards the creation of joint master-courses between universities.

At present, the IDEA League has identified a number of projects within or with part of the alliance universities in which it would be desirable to run joint master courses. In order to support this we established an overall checklist of criteria that need to be addressed in order to establish such a joint course. Table 2 shows some of the difficulties that need addressing within the IDEA League, such as the start/end and structure of the academic year and the exam period. At the same time, this fresh approach provides opportunities for introducing new features that might be more difficult to overcome in long-established systems. Some of the IDEA partners currently set up bilateral courses with partner universities in the third world, and experience from this flows back into the alliance. Setting up joint master-courses poses the question of admission. Within the IDEA League the qualification profiles in the bachelor provides the entrance to the master. But what about students from abroad? A comparison of the selection criteria at each partner, and how each institution deals with the admission of foreigners, shows that there are many similarities between the four and that opportunities to collaborate exist. For example, the evaluation of degrees from rather less known universities sometimes requires time-consuming effort and sharing expertise in this area is profitable.

Global culture

The IDEA League was created in response to internationalisation and the increasing competition in higher education, and now works together on a broad spectrum of issues. We learn from each other, share expertise and experience and through this each individual institution develops. In addition, we learn about the differences in culture and functioning and this is what is required in a global world. So are we converging towards one culture? Bird and Stevens (Bird and Stevens 2003) say that shared experiences makes one membership in the global culture. Aiming at global managers in business, they describe the characteristics of members of the global cultures as

“being educated, connected, self-confident, pragmatic, unintimidated by national boundaries or cultures, democratic and participatory, individualistic but inclusive, flexible and open and begin from a position of trust”.

Can this also be applied to higher education and is the IDEA League on its way to a global culture? We share experience and expertise and we intend to educate our students in this direction. By sharing expertise we also share knowledge, and historically, universities are places of knowledge production.

Nowotony *et al.* (Nowotony *et al.* 2002) explain that knowledge production is no longer this simple and that nowadays knowledge needs to be put in context of the knowledge society:

“Contextualization means that (unknowable) implications as well as the (planned or predictable) applications of scientific research have to be embraced. ... Contextualization which contains, or is accompanied by, such a ‘human element’ is more likely to take subjective experience seriously. ... Universities will need to be adaptable organizations (and comprehensive institutions?) rather than specialized organizations (or niche players?)”.

International collaboration widens the context for a university and highlights the cultural differences, and therefore, contextualisation should happen easily in universities that are embedded in an alliance. This is specifically important for the graduates because today’s students need to be educated for capability and employability (Scott 2002) and this requires that the context be taken into account. A study involving 1200 graduates from 30 leading universities in 10 countries revealed that there is remarkable agreement on their views concerning their career goals: 75% wanted to work for a global company or work with people from different countries (Bird and Stevens 2003). They agreed that their four most important priorities are one’s own personal development and growth, developing a career, spending time with close friends and relatives and building a family. In view that the objectives of graduates from different countries are converging, the approach used by the IDEA League seems to be in the right direction.

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