Universities in the network society

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Introduction

The professor who supervised me during my doctorate in history was a great scholar. He was also an impressive rhetorician and a brilliant author. I considered it a privilege to be his student. Our relationship was very warm and personal, and he had a tremendous influence on my development. Nevertheless, I did not have a very high opinion of the quality of his teaching. During his lectures he would go on and on about topics that he happened to find important at that moment. I didn’t attend many of them. His examinations resembled private conversations more than student evaluations. I passed them without ever feeling that my progress in the programme had been established. The casual help he offered students who were writing their theses was encouraging but of little practical use. I learned more from my fellow students’ help and criticism. In truth, my mentor simply assumed that I would be able to find my own way. And despite all this, I was happy and reasonably successful as a student, because for the most part I was free to tailor my programme to suit myself and because a great man took an interest in me. I accepted his deficiencies as a teacher. I was stubborn enough to think that I would do all right on my own. By studying and practising, I gradually learned my profession. Like so many others, however, after a few years I was unfaithful to the discipline I had studied, and I ended up following entirely different paths. Like everyone else, my student days were merely a particular phase in a life of continuous learning.

I am telling you this story because it has important lessons for all of higher education. Those lessons are sometimes misinterpreted and, as a result, not everyone is aware that in the network society of the 21st century universities will be and indeed must be different to how they have been until now. That is not only because of information and communication technology (ICT), the main subject of this conference. ICT is merely an inevitable means of creating the type of education that society and individuals require. My purpose here, however, is to show you why and to what extent education must change. I will then attempt to describe the role ICT will play in redesigning it.

The lessons of the past

I will begin by reviewing the lessons to be learnt from my story, which can be told in many different ways. The most important lesson echoes Castells, who, in his book The Rise of the Network Society [1], states that close personal contact
between experienced experts and novices is crucial to the latter's development and will always be so. No one who has been educated or become skilled in their profession has done so without the guidance and example of one or more persons who have already won their spurs in that profession.

The second, equally important lesson — one not mentioned by Castells — is that respected experts in a particular field do not necessarily make great teachers, nor do they always give proper lessons or even take the time or feel inclined to do so. The third, frequently forgotten, lesson is that none of us really needs to have many different mentors in the sense of trusted, personal advisers or examples. Learning consists for the most part of absorbing information, applying it and slowly and patiently building up expertise, working with fellow students and, where necessary, being guided and evaluated by people who are expert guides and evaluators.

If we look at the implications of these lessons, we may conclude the following. University students of the future will also need to find mentors who set an example for them, inspire them and give them the confidence to learn to practise a profession. As great scholars are not necessarily good teachers, students who do not yet belong to the intimate circle of such scholars risk getting the short end of the stick. They often have to make do with poor instruction, minimal expert guidance and poor-quality tests. Many of them take their examples and find inspiration outside the university, sometimes only after they have graduated. As student numbers have increased, the distance between great scholars and students has grown, curricula have become more strictly regulated and higher education has become scholastic in a way that does not encourage the creativity of young students and their desire to experiment. Mediocre scholars who are forced to teach are often just as inept as the old-school professors, but they lack the latter's personal authority. With the sharp rise in academic staff that followed the explosive increase in student numbers, many academics have been more interested in enhancing their own reputations through research or other important matters than in exploring what students really need. It is only when students reach the final stages of their programme that they encounter something resembling the traditional, personal relationship between master and apprentice.

When experts in a discipline prove to be poor teachers, are not really interested in their students and can scarcely distinguish between different teaching methodologies, let alone be able to apply them with any proficiency, time and energy are lost. Complaints about the quality of graduates is evidence enough, but so is the tremendous number of drop-outs. Students are trapped in the system, and have no one who will allow them and teach them to grow beyond it.

The implication of the third lesson is that we should not treat academic staff as if they were already great teachers. If they are involved in teaching, they need to be equipped with the proper expertise and the right tools. These tools are the main focus of this chapter.
The need for educational vision

Most universities today have large numbers of students. That will not change. Many people now have access to higher education. The composition of the cohorts of students entering university each year is less homogenous than it has ever been; societies everywhere are, after all, becoming more heterogeneous, melting pots for different cultures. That alone makes it unlikely that there will ever be enough scholars around to trouble themselves about each and every one of their students. There are too many students, and they differ too much from one another; it would be unfeasible and also undesirable. What is desirable is that every student should find an environment at their institution of choice in which they can grow and study with others and in which there are people who act as their guides, counselling and evaluating them. When they graduate, they should have sufficient expertise to start their careers. Some of them will pursue an academic career, but most will seek a job outside the academic world. All will have to continue to learn for the rest of their lives. After all, every sector of society is changing rapidly, and no one can maintain a personal equilibrium or function successfully in society without continuing to learn. That is an old truism, but given that science, the labour market and society in general are changing so rapidly and on such a global scale, it has become more relevant than ever. We are already seeing an enormous market for lifelong learning around the world. We describe it as a market because there are many providers of many different products, and many different types of customer. Universities have a corner of this market. If they do their job well, that corner will continue to grow. Competition is inevitable, however. They will not only compete with one another, but also with private educational institutions and companies. The university as a community of scholars surrounded by pupils and auditors no longer exists, and in fact no longer has a future as far as teaching is concerned. The university as an institution is in a transitional phase. Today we have large educational institutions with bureaucratic administrative cultures, beneath which is an organization of independent professionals, all of whom act as if they are mentors. This construction is no longer in tune with reality. Fortunately, teaching methodology in higher education is becoming a growing topic of concern around the world, and that concern is having an impact. However, universities will only be able to solve the major challenges that they have long faced by making creative use of ICT.

The inevitability of ICT

In the network society that is emerging, every sector of society will systematically use ICT. The existence of ICT will make it possible to teach and learn in ways that are much different to how we do now. Studying may well come down to communicating with others or reading a book, but ICT will provide the infrastructure in which the subject matter can be found, student tasks can be performed and the communication and collaboration required to learn can take place. This is not the place to explain that there are many different types of university and that there will always be so. The aim here is to attempt to explain
how ICT will change every institution in its core educational functions. Every university, every faculty, every staff member and every student will have to decide how they are going to use ICT, based on their particular aims or mission and on an educational vision that does justice to consistent views about humans and society. ICT should not and does not have to lead to homogenization. In future, universities will distinguish themselves in educational terms within an infrastructure that is as global and open as possible, but which allows each person to be themselves. It used to be that scholars all resembled one another in their erudition, their approach to the literature and their respect for the rules of their discipline. They were distinct in their areas of specialization, their personal attitudes and their own contributions to scholarly discourse. Future scholars will work and meet one another largely in the virtual world, and there they will discover that, now more than ever, specialization implies ignorance and that their authority is restricted even in their own specialization, but that this is really not so bad as long as the virtual infrastructure allows them to network with many others on scholarly matters, education and applied knowledge. This will put the meaning of specific scholarship into perspective, but not in the sense that it will become less important. One of the characteristics of a democratic society opened up by technology is that arguing from authority only works when and to the extent that it is based on tried-and-tested expertise.

The instructor-centred, professorial university was a context well suited to the hierarchical society of the 19th and much of the 20th centuries. The new reality is that the contexts in which people live, work and learn have acquired another dimension in the form of a virtual world in which every organization and individual creates their own virtual context.

It is from these virtual contexts that we can explore the world. These contexts contain all types of information or provide a basis from which to retrieve that information. Working from and through this virtual reality, people can find one another and communicate, debate and collaborate with one another. Every individual, and consequently every expert, will select and create his or her own physical and social contexts. The same will be true of every organization, and particularly so of universities, because it is their task to generate knowledge, skills and attitudes and transmit these in such a way that people are moulded by them and derive the competencies they need from them to function in society.

ICT will make it possible to make up for the shortcomings of the university, which to some extent has become mired in outmoded ideas of scholarly teaching. We can apply the lessons reviewed earlier by creating new forms of education that make maximum use of the tremendous opportunities offered by ICT. Let me demonstrate that by looking at what is, in theory, possible. This is not a specific recipe for education, but it does allow us to reflect the heterogeneous nature of modern society in the world of the virtual university.

A number of fundamental consequences

ICT has five fundamental and inevitable consequences for universities. Society has acquired an extra dimension, with people being able to move about in virtual
contexts as variations on a world. A global ICT infrastructure is developing; a virtual world. In other words, the universities’ educational environment is acquiring another dimension in the form of a virtual educational environment, that is, a virtual university.

This brings about a second important consequence. The subject matter is no longer contained in people and books, but can be accessed through the network. Although that access may not always be easy or free, in theory it does exist. That also means that people and organizations can define and mark off their own subject-matter domains in the network.

The third important consequence is that ICT makes things more explicit and the significance of educational functions clearer. That is because many things become much more obvious to everyone, but also because ICT forces us to rationalize processes. It becomes harder to conceal things. In terms of teaching, that means a greater concern for the quality of instruction, guidance and evaluation of educational processes and student performance.

The fourth consequence is organizational in nature. The functional structures of universities will have to be re-engineered. The professionals will retain their autonomy for those tasks where autonomy is necessary and a natural outcome of their work. This means, for example, that the bureaucratic systems set up to arrange funding for fundamental research will have to be dismantled to a certain extent. On the other hand, teaching tasks will be assigned to certain sections of the organization and to people who specialize in this field. Institutions for distance teaching have already demonstrated that this is a sensible thing to do.

Fifthly, if universities are to continue to play a role in initial and advanced education, they will have to co-operate, not only with one another, but also with other partners, for example publishers and software houses. Such cooperation will increasingly disregard national frontiers, and that too will change the face of the university. To summarize, we can say that the university will, to an important degree, become a virtual university.

The university that we are all familiar with is made up of a number of buildings. These buildings house the various disciplines, the libraries, the classrooms and laboratories. There is an auditorium for ceremonial occasions. The university is linked to the world beyond through its front doors, by post and by telephone. People are constantly on the move. The many different forms of direct communication are an essential element of life at a university, a life that — despite its extensive network of relationships, some of them around the world — is largely local in nature. The students live close to the university buildings and can regularly be found there taking classes, studying together and meeting fellow students and teachers. Consequently, even when they are not doing things directly related to their studies, they are living the student life, a phase regarded as a highly significant part of a young adult’s development.

All this will remain, but yet something else has been added. People will behave differently as a result. Teaching may also change, and indeed it should. Again, the specific way in which each institution changes will not be determined by ICT. ICT is only a means, although it is in no way a neutral one. It will change universities, something I will demonstrate by elaborating on the idea of the virtual university.
The electronic infrastructure

Many institutions already have an electronic infrastructure. What that means is that staff and students have personal computers (PCs), some of which are equipped with CD-ROMs and Internet access. A growing number of institutions are setting up mirror-image virtual institutions in the shape of an Intranet, part of which is protected and part of which is open and can be accessed through a website. Often it is the departments or faculties that set up something of this kind for their administration or PR machinery or to provide student, staff and public information. A recent, widespread trend is to equip virtual environments of this kind with specific teaching functions. Software houses great and small are working on environments designed specifically for education. Some institutions are picking up on this or constructing their own electronic teaching and learning environments. The direct result of installing such an environment is that working and studying have become more flexible in terms of the place and time of action. This means that students no longer need to frequent the university buildings as much as in the past, and that some of them can even go through most of their programme at a distance. The availability of this kind of environment is also often used to get students working in groups or on their own, without an instructor being present. The instructor can still observe what is going on and even take corrective measures. When the concern for teaching methodology in higher education coincides with this particular way of using an electronic infrastructure, there is the potential to create many new forms of education. Some or all of the old teaching methods can be replaced by new ones.

The core functions of education — instruction, guidance and evaluation — can be performed in many new ways. Institutions or parts thereof will base the specific methods they use on the characteristics of their student body, the nature of the material being taught, the attainment targets and their educational vision. Students will select their school based on the degree to which the institution is prepared and able to take their personal characteristics and ambitions into account. This makes it possible for them to create the context in which they need to reach their attainment targets. In theory, students will have the chance to shop around before deciding on an institution.

Institutions and commercial enterprises will enter into a range of different alliances to develop electronic teaching environments. These environments will become more important as they become better able to satisfy the requirements of forward-looking education, as they grow easier to use and as users become better equipped to use them.

The subject matter

Empty buildings are spooky. Empty electronic environments lack even this dubious charm and are inclined to disappear. To some extent electronic environments are filled by the people who move about in them, and who can be encountered and are visible and approachable in them. An important part of what fills these environments, however, will always be information. Subject matter is a
type of information that is indispensable in higher education. Until now, students found this subject matter by following their teachers' instructions. Teachers presented it in lessons, supplied texts, wrote books for students and had them search library catalogues to compile and study bibliographies. None of this is likely to disappear, but the significance will change. Thanks to the Internet, it is possible not only to search catalogues, but also to download information directly in the form of texts, static or moving images and sound. The process of digitizing scholarly and other forms of information has begun slowly, so that digital subject-matter databases can be constructed. Some of those databases consist of summaries of sources of teaching and learning material available for certain subjects. Some consist of contextual information which has been revised specifically for educational purposes. These databases can be used and supplied in different ways, for example through a network PC, on a CD-ROM or in printed form. A selection can be made from the contents based on the prior knowledge, other characteristics and attainment targets of the students concerned. It is also possible to embed various support devices and activate them when desired. Both the teacher and the students can select these devices and decide how best to use them.

In terms of digitally stored subject matter, there have been two significant problems until now. The first was technical in nature. Electronic learning materials developed on one particular platform using a particular software package could not be used on another platform, especially if the latter ran a different software package. An American project is attempting to use XML (extensible markup language) to increase the interchangeability of educational resources. The project involves companies working with educational institutions. All the participants seem to understand that they have a common interest and that they should compete not by each one cobbling together its own ICT equipment with its own specific features, but by vying with each other on the quality of their programmes, courses and facilities.

The second problem is the rigidity of the educational products. Most of them were developed for specific, teacher-controlled environments. That means that the content, the teaching methodology and even the form is fixed. As mentioned earlier, teaching and learning can take place in many different ways. There are also many different ways to divide up duties and responsibilities between the academic staff and the students. The content and teaching methodology may vary, depending on who makes the decisions and the objectives to be reached. Finally, the means of supply, whether in printed form or on a computer screen, is a question of taste and functional considerations. It would be a step in the right direction if groups of experts in specific disciplines were to work together to construct databases mapping out the subject matter. These would have signposts taking into account the students' prior knowledge and requirements on the one hand and their specific attainment targets on the other, and would have basic knowledge stored in such a way as to be available to students with the content, teaching methodology and design tailored to their individual needs. The educational formulae that institutions choose to construct and operate with these digital databases can vary enormously. In theory, even institutions that cling to the classic teacher–student relationship can benefit from using them.
Evaluation

One of the most crucial functions of education is to judge to what extent students have attained their performance targets. Educational institutions have a serious responsibility to award degrees based on these judgements, degrees that have important social implications. Traditionally it was largely the teacher's job to judge a student's performance, and in fact this is still the case today. This implies two things. First, it is largely the teacher who determines what a student must know and be able to do at the end of a programme; secondly, it is the teacher who determines whether the student has actually achieved these targets. There has been much discussion of late about the number of students actually finishing their programmes. These discussions are partly related to the ICT issue, but to a great extent they are unrelated. Ideally, attainment targets should be selected to reflect both what a student can do and wants to do, what the experts in a discipline regard as useful and possible, and what the sectors of society in which the graduates will function have indicated as desirable. In practice, we have seen that general and specific attainment targets are being defined increasingly in terms of competence, no longer subject to the personal insights and preferences of individual teachers. As a result, more care is being taken with the quality of testing. With responsibility for the learning process being shifted to the student, efforts are also being made to give students the tools that they need to evaluate their own progress and success rate.

ICT can play an important role with respect to everything that needs to be done in this context. We all know about the item banks from which teachers can take items to compile examinations. An attempt is also being made to set up electronic testing service environments that both institutions and students can use. We are starting to see these testing service environments being integrated into virtual teaching and learning environments. In this area, more than in any other, we appear to be witnessing the start of extraordinarily important changes. If institutions and commercial enterprises joined forces on this point, we would take a huge step forward.

Three types of virtual university

Students may require many different types of guidance to succeed in performing the tasks they need to reach their pre-determined targets. From the perspective of ICT, it is sufficient to say that such guidance consists mainly of communication. Communication is something that can be undertaken on the network. This means that where teachers and students used to speak to each other, either in person or on the telephone, leaving the rest to written communication, they can now also communicate on the network or even use the network to replace earlier forms of communication. The terms tele-learning and distance education fit into this context. Various institutions claim to offer distance education in addition to the teaching provided on campus. This usually means that students select the time and place to carry out their tasks, without the teacher being present, and receive guidance on the network.
There are a few possible variations on this situation. The first is an institution that is located in a particular place and whose staff also do most of their work at that place. Students attend classes there, study and work together and have their skills tested there. There is, of course, an ICT infrastructure, but its function is determined by what happens at the physical location. In this set up, the virtual university is simply one aspect of the locally sited university.

The second variation is that there is a physical educational environment but also an electronic one. The latter operates within the former to some extent, and staff and students operate within the virtual environment to some extent. Some group processes also take place within this environment. Location has become irrelevant in part. Quite a few institutions appear to believe that contact and distance education can co-exist, and indeed intermingle, in a single institution. Therefore students who are physically present at the institution on a regular basis receive instruction alongside students who are only in touch with the institution via the network.

The third variation is one in which the virtual environment is primary. Instruction, guidance and evaluation are all carried out entirely within this environment. There are, of course, physical locations in which those working in the virtual environment undertake some tasks together, but teaching and learning take place mainly in the virtual environment. Some expect that this variation will become the most common in the future. The social interaction that forms part of a young person's development will take place not within the educational institution for the most part, but rather in the contexts in which the student lives and works. Initial and advanced programmes will segue and overlap, as will learning and working. Some secondary school-leavers will find this attractive. Most, however, will continue to come to the institution, needing the physical and social environment to further their development. There is little reason to assume that universities and polytechnics will be able to shut down their buildings and that the concept of a campus will disappear.

Today there are some institutions matching the description of the first variation, some trying to create a virtual or electronic educational environment alongside their physical one and a few that call themselves virtual universities. Upon closer inspection, the latter generally turn out to be examples of the second variation, or attempts to link up the virtual environments of different institutions in such a way that students can easily surf from one to the other and put together a programme that draws on the educational resources of different institutions.

**Lifelong learning and the role of the universities**

People were engaged in lifelong learning long before ICT made its appearance. Every country has its own complex system of education. The top echelon is tertiary or higher education. Many students who enrol in tertiary education arrive there directly from lower forms of education and are on average about 20 years old, which means that most of them grew up in a world dominated by ICT. Young people's lives nowadays are shaped by radio and television, audio and video recorders, standard and mobile telephones, and increasingly by PCs with CD-
ROMs, modems and, therefore, the Internet. Education may not always make use of it, but ICT has become a fixture in the daily lives of young people. When I enrolled at university, I had a typewriter — nothing more. I had never seen a computer, nor had anyone else. PCs, CD-ROMs and the Internet hadn’t been invented yet. Television was only just beginning to catch on. Radio was important, but mostly as a form of entertainment. Most people didn’t have their own telephone, and certainly not a mobile one. The telephone culture of today did not exist. The fax had yet to be invented. In the new millennium we can expect that virtually every student enrolling in tertiary education will be well acquainted with the many forms of ICT. This is in no small way due to the fact that ICT itself continues to develop and become more integrated and user friendly.

But what does this mean in specific terms? Almost everyone will, of course, use a PC for word processing, calculations and to store information. Most people with a reasonable education will derive a lot of the information that they possess as individuals from the virtual world and feed it back into that world. Future students will be able to explore various programmes of study and the advantages and disadvantages of different institutions on the Internet. They will also find information there about the labour market. Television and radio will keep them up to date about events around the world. They will use their networked PC to find out more and to fine-tune this information. In addition to the usual network of friends and acquaintances, many will also have a network of contacts in the virtual world. This means that they will have more communication options open to them through that network. People do not live solely in virtual worlds, but their virtual lives do have a major impact on the rest of their existence, which is true for universities as well.

Besides initial education, all institutions provide further training in many different forms. The student population enrolled in advanced programmes is much less homogenous than in initial education, in terms of age, prior knowledge and experience. Its aims are also more varied. Sometimes such students are graduates who have been sent by their employers for specific training. Sometimes they are practising professionals who wish to be brought up to date on new developments in their field. Sometimes they are people who would like to know more about particular subjects, because they believe it will help them grow as individuals or increase their opportunities in the labour market. Some students come intending to get a certificate or degree; others are chiefly interested in acquiring knowledge, skills or competence and are not bothered about a qualification. They learn a lot and study a lot without participating in ‘education’ in the usual sense of the word. Educational television and radio, libraries, book shops and, finally, publishers play an important role in lifelong learning. To some extent that role is being taken over by the Internet, both in what it does now and what it has the potential to do. A market for lifelong learning is emerging, with many different types of supplier of many different types of product. Educational institutions are merely one type of supplier. Until now they have focused mainly on providing teaching in the form of courses, in other words all-round packages that include frontal instruction, guidance, evaluation and certification. Initial signs indicate that the demand for such packages is dwindling rather than growing. Far more in demand are the tools and support that help people learn. That learning
can take place in many different contexts. Distance education, along with the use of ICT, will become a more important element of advanced programmes. To some extent distance education will involve students in a certain working environment. Learning on the job can be enhanced by reflecting the virtual aspects of the workplace in a learning environment. We are slowly seeing the start of developments in this field. In some cases, these are resulting in forms of dual education, this being a combination of working and studying, in initial education. This is, in turn, putting more pressure on existing relationships.

Some of the demand for advanced programmes can be met and is being met by teaching and learning in small groups. It is feasible for teachers to provide effective guidance in such a situation: the feasibility lies in the fact that the students are always at an advanced level of learning, and do not require much supervision in terms of teaching methodology and technique. They are also keen to make good progress and will benefit from having a teacher who can explain things quickly to them and who also knows the best way to tackle a subject. The old, familiar didactic triangle is desirable in this case because it is the most efficient approach. The students deliberately choose it. The demand for this set-up can be met to some extent in a classic non-ICT environment. However, using the capabilities of the network to video conference also makes it possible to provide this type of education within a distance-teaching context. In a number of cases it will be the most advantageous solution. This is part of what the so-called Internet universities offer, an entirely classic teaching approach set into a modern infrastructure.

At the other end of the spectrum of lifelong learning is the concept of open learning. Students, if indeed we can still call them that, purchase books and other materials and learn whatever they feel they need from them. When educational institutions offer a learning environment in which students who have had training in certain subject areas can decide, during the various phases of their advanced programme, whether or not to purchase support or tools, the institution can supply these to them. Many different variations on this system are possible in an Internet learning environment. The interesting thing about the market for lifelong learning is that the scope of demand is wide-ranging and can in fact be met. This is also a disadvantage, however. True tailor-made education requires a systematic form of flexibility that does not come naturally to educational institutions, with their fairly detailed educational programmes, trimester systems, course schedules, course and research load calculations for individual staff based on these, and with the limited authority they have to give staff members specific orders and assess them on specific products. This is generally acknowledged at institutions offering advanced programmes, an awareness brought about by competition with commercial institutes and by the fact that advanced education must be self-financing at the very least. The light has yet to dawn in initial education, although it will never have to become self-financing.

There are clearly many choices ahead for the various parties involved: the institutional administrators, the faculty boards and so on, but also the individual teachers and certainly the students.
The most important conditions and obstacles

The picture that I have tried to draw is slowly taking shape. Before it is entirely complete, however, a number of conditions will have to be met. The first of these is that the virtual environment must reach maturity and become as commonplace as the physical and social environments. This will require shifting the technical complexity of ICT from the interfaces to the inner workings. Motorists today do not need to know about the mechanics and electronics that make a car work. It is much more important for them to know the traffic rules than the technology. A similar situation should come about for ICT. Everyone should be able to use it easily without giving it another thought, and without coming up against large amounts of jargon, incomprehensibly complex software, narrow bandwidths and constant errors. True, it is up to people to learn how to navigate the virtual world, but that world must also become a more comfortable place, even for those who are not interested in its complexities.

The second condition has to do with what that virtual world and its contexts will contain in terms of types of transaction and content. The assertion that knowledge will no longer come from people and books but from the network will have to be made reality. The virtual world must become a landscape of knowledge, skills and attitudes generated by people. It will need signposts and explanations telling why it is worth bothering to visit a particular part of that world.

The third condition, specifically related to the universities, is that these institutions will have to reconsider the important social roles that they play, and in particular the way in which they want to contribute to lifelong learning. The relationship between initial and advanced programmes will have to be reviewed, as will the many different ways of teaching and learning possible in each phase. The third condition leads inevitably to the fourth, which is that universities will have to be prepared to consider a culture and organization that suits their functions in modern society.

None of these conditions have yet been met and there are many obstacles to overcome. The technology is still unmanageable. People cling desperately to old patterns of behaviour and are not inclined to consider new organizational concepts. Nevertheless, universities face the challenge of a future in the network society. They will be interconnected in global networks. They will adopt many different types of educational approach. They will to some extent operate on the commercial market. They will be open to and connected with every aspect of society. Each one will provide a lively arena for scholars, researchers and people who are involved in organizing and facilitating the learning process for students. They will give new students the opportunity to find the mentors they need for their development.

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