Chapter 15.
Blended Learning And MOOCs

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Abstract. The digital transformation of the world is likely to cause dramatic shifts in the world of learning, as is shown spectacularly by the MOOCs phenomenon [5]. It faces universities with the opportunity (and the obligation) to transform themselves thoroughly into institutions with a significantly improved and extended service to society and the ability to adapt flexibly to the rapidly changing needs (learning organizations). The Internet and the multimedia-interactive information technology allow to extend education beyond the (school) hours as well as beyond the (class) walls. The consequences of this simple observation are not yet fully seen. It is not just that universities' own regular full-time students get new "blended" learning schemes offered, but it also means new tools for flexible, part-time and distance learning, and it especially implies that external target groups can be served significantly better, such as future students (study orientation), graduates and professionals (lifelong learning), and last but not least international (global) audiences (virtual mobility).

A case study initiated in 2014 by the Royal Flemish Academy of Belgium for Sciences and Arts and lead by two prominent thinkers from abroad concentrated on the question how traditional universities should deal with blended learning and MOOCs. The key conclusion is: "The optimal exploitation of ICT and the Internet for the new higher education of the 21st century" will not take place spontaneously. A 'bottom up' approach, i.e. the support of a multitude of individual initiatives, is necessary to let creative ideas grow, but insufficient to bring about the necessary changes in higher education. This requires powerful and radical 'top down' measures, and some concrete recommendations are given in this respect. In addition there is a continuing need for further fundamental research and visionary thinking.

Keywords. Blended learning, online learning, MOOCs, universities, higher education, distance learning, flexible learning, lifelong learning, virtual mobility, digital technology.

1. A systemic vision as starting point.

The world today is completely permeated by digital technology propagating deeper and wider every day. The university campus can be seen as a physical artefact built on top of a digital entity [2]. The campus houses as much in digital data, information and communication systems and software as it houses in buildings and premises. Unlike the buildings however digital technology creates an opening to the world outside the campus: companies, society, the other universities here and around the world, anyone who owns a PC, laptop or smart phone. This opening is manifested in a very spectacular way by the MOOCs.

Universities have not yet really adapted their strategy to this digital reality. This is not just about online learning and blended learning. For example, from the huge amounts of data (big data) that universities can collect about their students today and tomorrow, it becomes possible to design digitally an optimal curriculum for each student individually, including customized learning methods. These data provide at the same time a huge source of information for the development of educational strategies and methods of the university, the faculty and the teachers themselves. Obviously digitalization has enormous implications for scientific research as well, but those are beyond the scope of this project.

Students and teachers living on and around the campus today have grown up in this digital world and want to develop further in it. The practice of higher education lags behind on this reality, and this gap seems to be growing yet. There is an increasing alienation of the learner from the currently used methods of learning. The development of digital technology is the at basis of dramatic shifts in the world of learning, whether we like it or not. At the same time universities are faced with the opportunity (and the obligation?) to transform themselves thoroughly, into institutions with a significantly improved and extended service to society and the ability to adapt flexibly to the rapidly changing needs (learning organizations).

Universities would not be universities if they would not handle this transition with care and criticism, and have no regard for the other side of the coin: the potential adverse effects of the use of learning technology on learning (particularly "profound learning"), on the personal development of students, and on the university itself.

This paper is the outcome of a case study organized in 2014 by the Royal Flemish Academy of Belgium for Science and the Arts (KVAB) entitled 'Blended Learning in Flemish Higher Education'. Similar studies have appeared in other European countries. For this project two thinkers from abroad were invited to explore how online learning resources could be blended with more traditional forms of university education. Both Thinkers have complementary top expertise in the advanced use of ICT in education: Diana Laurillard (University College London, London Knowledge Lab) is a leading academic in the area of blended learning and Pierre Dillenbourg(Ecole Polytechnique F'ed'erale de Lausanne,EPFL) is the coordinator of the comprehensive MOOCs program at the EPFL.

For a year, the Thinkers collaborated closely with a representative local expert group. They also participated in various seminars and workshops at the five Flemish Universities and the UCL (Universit'e Catholique de Louvain). During a closing symposium on November 19, 2014 they presented the results of their study, and confronted them with the views of representative organizations and the experiences of providers and users of online courses. The Thinkers have cast their opinions and recommendations into two position papers that are published integrally in the KVAB- Standpunt 33 report [4],[2]. A synthesis of the position papers appeared in the journal TH&MA [6].

The paper summarizes the main findings of this case study. It discusses the new opportunities generated by online learning, how to unlock and use them, and what strategies universities can use. The paper concludes with some personal observations based on my own long term involved with long distance education.

2. Opportunities

2.1. New outward opportunities

Widening access in time and space.

The Internet and the multimedia-interactive information technology take education (or at least some forms of it) outside the (school) hours as well as outside the (class) walls. This statement is very simple, but nevertheless its consequences are not yet fully seen. It is not just that universities' own regular full-time students get new learning schemes offered (such as flipped class, see below), but it also means new tools for flexible and part-time learning, and it especially implies that external target groups can be served better, such as future students (study orientation) and graduates (lifelong learning).

From classes to masses

In the digital world almost everyone has almost unlimited access to a vast global source of information (libraries, databases, Wikipedia ...) .But 'a library is not yet a university'. Even when MIT launched its Open Course Ware (OCW) project early this century, it was still clearly said: this is course material (primarily for teachers), this is not the teaching. In contrast, the MOOCs resolutely take the step to the actual teaching, all components included: not just video lectures but also problem solving, tests, discussion groups, assignments, exams. They perform a truly spectacular scale leap (both in student numbers and action radius): from "classes" of at most a few hundred (and preferably much less) students on campus to "masses" of one hundred thousand students all over the world. Of course 'it is not all gold that glitters' ("In general good MOOCs are better than bad MOOCs!" [2], and of course the student drop out is generally quite high (around 80

MOOCs as networks for knowledge building

Today's MOOCs are not just media shows of big star professors. In these global networks of teachers and learners also collaborative knowledge building takes place. Sometimes learners become teacher or researcher (peer learning, peer assessment, crowd sourcing) and teachers and researchers become learners. A hundred thousand participants allow a hundred thousand observations, whether on their own learning, on their Italian translation of some English sentences, or about the weather outside. This way observation and measurement data sets are obtained with an exceptionally high statistical significance and reliability.

Since a number of years, scientific research centers have established their own digital networks, the interaction between them is continuous and no longer confined to papers and meetings. MOOCs can become a large scale and open variant of these research networks. Perhaps the potential of a new type of global virtual knowledge centers has just been unveiled, perhaps there are certain scientific, technical, social, medical questions that can find a better and faster response through global interaction among peers than by specialized research in competitive research groups.

2.2. New inward opportunities: blended learning.

Teachers and students today have to their disposal a lot more and better tools for teaching and learning than this was the case at the beginning of this century, both within the classroom and outside (online). Online learning adds a new dimension to education. Students can access learning materials at home and after school hours, view lectures, par-

ticipate in seminars and discussions, perform tests and get feedback on them, work on projects in group. The decoupling between learning and a fixed time schedule alleviates several logistical problems and creates a lot of flexibility, it allows to provide a full educational support for part-time students, working students, students with special programs. Blended learning is undoubtedly the model of the future, with 'blends' tailored to the specific needs and context of the target group.

With online learning, some well-known problems in current higher education can be solved. Students in the final year of secondary education can be better informed and oriented in their study. Another problem is that of the students who come inadequately prepared to problem sessions and seminars: they can bring their knowledge up to date through online tests with feedback.

Some pioneers of educational innovation apply completely new schemes of teaching. They let their student teams prepare themselves their course in wiki format, using "Open Educational Resources' (OER) available on the web, and give them projects to carry out using that course. They do not give lectures in the classical sense, but animate every week an intensive live session, in which they give presentations and explanations where necessary. For the assessment of students they look not only at the end result (the project and the oral exam about it) but also monitor their activity during the live sessions and on the blogs, and integrate some peer assessment.

But not everything that happens is well thought through. In the flipped class concept students can watch in advance at home video clips in which the teacher presents short modules of the course, before attending interactive lecture sessions with the teacher and his assistants. The model is sometimes applied to solve the problem of the student going unprepared to working sessions , but it is not catching on just like that.

With educational technology a lot is possible, but that is far from saying that it all goes by itself. Technology does not solve the problem itself. And after all, the ancient proverb "what's the benefit of candle and glasses when the owl does not want to see" (again a literal translation of an ancient Flemish proverb: 'wat baten kaars en bril als de uil niet zien en wil') remains valid even for digital learners. Scenarios of blended learning have to be thoroughly thought through, planned, evaluated and adjusted. That brings us to the topic of 'learning design' [4], a new professional and (applied-) scientific discipline.

3. Learning design

Learning design is a design discipline, of the same kind as mechanical design and object-oriented design. One does not just cobble a machine or a software package together, there is some professional knowledge and methodology involved.

Professionalization

Developing a blended learning scenario requires a much more professional approach than setting up a traditional course. Obviously you start from your learning objectives, the needs and potential of your target audience, and the concrete context in which teaching and learning take place. There are different ways of learning: listening or reading ("acquisition"), discovery (research), discussion, practice, group work, assignments. Evaluation (formative and summative) is always an essential component. Conventional teaching is based upon co-presence in time and space and the use of physical objects. Digital

technology adds to that online communication and virtual objects. It allows in principle more personalization, flexibility, accessibility, inclusiveness (for students with learning disabilities, disadvantaged groups) and efficiency (also in terms of cost). Whether or not all that potential is also exploited effectively is a matter of ... .learning design.

More work for the teacher?

According to Diana Laurillard teachers who want to start with blended learning, more specifically with applications of online learning, should be aware of a substantial increase in their workload. The list of tasks to be fulfilled in the design and implementation of a blended learning course is very long [4]. This statement might discourage teachers to take the step, and in fact it is questioned by the experts group. There is agreement on the fact that there will be substantive shifts, such as less time for lectures and more time for coaching of small groups. There may have to be cut in other, less efficient tasks of the teaching team. The (formative) evaluation of students can be improved using technology (tests with automatic scoring and feedback already now, learning analytics in the future) , for the exams (summative evaluation) this is not yet generally accepted.

Personal satisfaction: a deeper understanding of the own learning goals

An interesting experience is that designing e-learning applications often leads to a deeper understanding of the intended learning objectives (and even of the essential content of the course matter) by the teacher teams. Those who went through this personal experience sometimes wonder what they were doing before.

How to make this happen?

It seems appropriate that teachers are supported by teams of specialists in learning design, and that at the same time they build among themselves "communities of learning design" within the various scientific disciplines. Moreover learning design deserves recognition as a full-fledged interdisciplinary scientific discipline, such that also non-educationalists and non-pedagogues can build a full academic career concentrating their research efforts on this subject. Diana Laurillard [4] gives a number of concrete suggestions and recommendations in this respect. In order to make this "learning design" "evidence-based", the sharing of experiences within the "communities of learning design' is absolutely vital. But there is not only a need for experience based expertise, also systematical, quantitative, fundamental research is necessary.

The big unknown: learning!

However professionally we design and implement our blended learning scenarios (learning design) , still it often remains a question whether and to what extent we have stepped up the quality of teaching and enhanced the attainment of learning objectives. Two questions for illustration.

- Independent learning (autonomous learning, personal learning) is widely professed in higher education as a point of belief, especially in a constructivist approach. "Guided personal learning" or similar mottos were on the education banners of universities at the end of the last century. Is this still the case? For some technological applications that enhance the student's learning comfort it is far from certain that they promote independent learning. Yet, learning technology comes best into its own in a context of independent learning. Open Educational Resources (OER) , Open Course Ware (OCW), learning in virtual groups and networks, online learning per se, are not really booming within mainstream education, precisely because education does not resolutely opt for independent learning, except for some brilliant pioneers (see above).

- Secondly: does online learning lead to deeper learning or is the opposite true? The well-known technology critic Nicolas Carr [1] has serious doubts. The core of his argument (supported by scientific research) is that the simultaneous use of multiple information streams (or even just the possibility to do this, in the case of hypertext) can have a detrimental effect on people's acquisition of deep and durable knowledge. The enormous flow of concepts and data, the fact that they come in all together through multiple senses, and the fact that part of our mental energy is spent on controlling these flows (to click a link or not?) overload our ability for mental processing and prevent that a sufficient fraction of the incoming concepts can settle definitively and correctly in our long-term memory.
  Moreover - and this would be even worse - Carr argues that by this way of learning we slowly but fatally lose the skill to acquire lasting knowledge (deep learning) through deep reading; the brain is plastic and adapts to the most frequent activity, at the expense of the less frequent ones. Carr's ideas are highly controversial and probably strongly overstated, but they raise important questions that require further research.

So there still is a lot of work to do for scientific research. We should not forget that for youngsters to develop themselves with knowledge, skills and attitudes to full-fledged bachelors and masters in a specific discipline is indeed quite different from updating their knowledge in a later age (e.g. with MOOCs.)

4. A systemic approach to innovation in higher education.

The MOOCs are a phenomenon that has dropped out from the sky and spread via the worldwide web, basically unhindered by existing traditions and rules. To develop blended learning within higher education is quite a different story: it is an innovation to be integrated in an existing system with a well-defined societal function; existing traditions, role distributions, expectation patterns; established rules and organizational, managerial and funding models. The complexity of the existing higher education system with its different decision levels, stakeholders, actors and pressure groups makes it highly resistant to change. [4].

Implementation steps

Therefore the implementation of innovations in higher education requires a systemic approach in the following sense:

1. We should start from the fundamental role of higher education, which according to former Stanford president Hennessy consists of learning and accreditation [3]. Learning: to guide every student through a process by which he/she optimally develops his / her potential to her/his own benefit and that of society. During this process he/she acquires knowledge, skills and attitudes which he / she would not be able (or have serious difficulty) to acquire on her/his own [4]. Accreditation: a diploma system should provide the necessary guarantees to society and give the individual legitimate recognition and optimal development opportunities.
2. We should act intelligently upon the "drivers" that steer the actions of the actors and the "enablers" that support these actions. Which are these "drivers', which are these "enablers"? To which extent the drivers are innovation-oriented and the enablers innovation-friendly?

- Drivers are: funding systems, rules regarding exams and certification, needs of stakeholders, quality assurance, strategic plans of institutions, curriculum contents requirements, needs and skills of students, careers of the teachers (objectives and opportunities). Many teachers would add spontaneously: the passion of the professor to share his expertise with the young (and the personal reputation within the student audience!)
- Enablers are: leadership and encouragement of educational innovation by the academic authorities, support for professional development (continuing education) of teachers, communities of practice, systems, tools and support services for learning technology, evidence from research and practice, learning materials for exchange and sharing.

From this analysis, it follows that two systemic actions could make a difference (along with a profound reflection on the role of higher education):

- an adjustment of the drivers making them to encourage the development of new practices of blended learning
- a further development of the enablers to make these new blended learning practices feasible, effective and sustainable.

Both these actions require firm and tangible interventions in the system.

The financial picture

Whatever the teaching method used (from conventional to online and all blends in between), there is always a fixed cost and a variable cost.

- The fixed cost for the design and preparation of a course (contents, learning materials, sources, activities, resources, learning environments) is independent of the size of the student cohort.
- The variable cost for teaching and coaching (tutoring, discussion, advice, counseling, guidance, formative evaluation, grading) is a unit cost per student, and thus increases proportionally to the size of the student cohort.

The use of learning technology in blended learning increases the fixed cost and is therefore more cost effective as the number of students is higher. Yet it is precisely the use of learning technology (such as the globally accessible MOOC-learning platforms) that allows a spectacular scale expansion. . If in addition the variable costs can be reduced by automating some of the related functions, it is possible to achieve a financially viable system. At present, the MOOCs are not yet financially viable, at least not for the supplying universities, because they are offered free or below the real cost , or because the share of the course fees that reaches the university is below the cost for the university. [4]. In the context of blended learning inside the university, a spectacular scale expansion is not an option, unless universities will introduce MOOCs into their regular education (see below), or go to develop and offer courses in networks of several universities (see below). Universities often opt for SPOCs: small private online courses. The fixed cost can be reduced by reusing and annually updating the courses and teaching materials. The reduction of the variable cost is the biggest challenge. The partial automation of tutoring and assessment and the development of forms of peer learning (discussion, peer assessment) are adequate strategies to achieve this.

In all of these developments the personal contact between teacher and student (and among the students themselves) must not be lost. An interesting experience in the ser-

vice sector (e.g.in banking) is that as more functions are efficiently automated ,the personal contacts between the company and the client develop their own intrinsic value and become more and more appreciated. The same trend can be expected in higher education.

5. When should universities engage in MOOCs?

There are many good reasons why European universities should become actors on the MOOCs scene. We can group these in four clusters [2]:

1. Like it or not, it is happening. Recent data from the platforms Coursera and EDX show that in Flanders 50,000 people enrolled for MOOCs in the last two years. The vast majority of them already got a higher education diploma, and only a good fifteen percent of them reach the finish line. But any way, there is a significant part of advanced education that escapes from the control of universities. Our universities do not control (decide, determine) who offers courses in digital space nor what their students can learn there.
2. Better to be an actor than a spectator. The MOOCs (and all the further digital learning developments that will follow from them) will change the value scales and rankings (such as international university rankings) that prevail in the academic world.
3. MOOCs create new opportunities directly related to their big scale (see above), which might be beneficial for the university's own on campus students as well (see below)
4. The current situation of universities is far from perfect anyway : the quality and efficiency of education is subject to improvement, the study orientation and the success rate of first year students is problematic, the universities can do a better job in facilitating flexible learning and supporting working students, ...

Moreover, with MOOCs the societal role of the university can significantly be strenghtened and widened. Lifelong learning is a broad action field for digital education: "a diploma with a service contract" for the universities' alumni, training courses for companies and public services, continuing education for teachers, ... Digital learning allows to meet specific target group needs: preparation and orientation of students in the final year of secondary education, retraining programs in view of employment. With "agile" digital curricula universities can respond quickly to new developments that create new training needs for which the classical curriculum revision procedures are too slow. And finally, the public debate can be enriched by the contribution of complete and reliable information and science-based insights from the academic world.

The encounter between two worlds. MOOCS: the Trojan horse for university education?

Within Flemish universities we found that there are strong reservations against the integration of online courses, and especially online courses of foreign origin such as MOOCs, into their own degree programs. By 'integration of courses' we mean: assigning credits (ECTS credits) to them in the regular study programs. Universities which produce MOOCs themselves (as the nearby universities EPFL Lausanne and UCL Louvain) have opened some of them (and assigned credits to them) to their own on-campus students, with varying success. Here too, some learning design is required, and the EPFL has already built some valuable experience in this area [2].

MOOCs are becoming large scale global communities of practice where novice and mature students, teachers and professional people are building knowledge together. Why shouldn't we give our students access to this new world?

In this respect it is an encouraging signal that the Dutch-Flemish accreditation body NVAO as well as the representative Flemish educational councils VLOR and VLIR expressed their approval of the integration of MOOCs in regular high education study programs . At least as important is the fact that the student body VVS is in favor of it. Its only caveat is that the integration of online learning should not diminish the direct contacts with the teachers and the quality of the tutoring.

Since twenty years there have been efforts to set up inter-university networks for online learning in Europe, at national levels as well as on a European scale. Within these networks universities would exchange and share their courses online and jointly produce and organize online courses (including professional training courses for the industrial world) . Although the pilot experiments were generally successful, most of the European initiatives evaporated once the funding from the EU stopped. And yet, for the inter-university exchange of online courses European universities have a competitive edge with respect to the US and other regions: the Bologna treaty is a basis for cooperation and student mobility, and the ECTS credit system provides the "single currency" for the exchange of courses. But apparently these networks have as far never been seen as a strategic priority by their member institutions: universities are more focused on competition than cooperation. Is this now going to change under the pressure of the MOOCs reality? It does not look like, despite the obvious value of these networks for teachers and (especially) the students ("Virtual Mobility").

Concrete Measures towards blended learning

The key message is: "The optimal exploitation of ICT and the Internet for the new higher education of the 21st century" will not take place spontaneously. A "bottom up" approach, i.e. the support of a multitude of individual initiatives, is necessary to let creative ideas grow, but insufficient to bring about the necessary changes in higher education. This requires powerful and radical "top down" measures:

- The relentless growth of digital technology in our daily lives will undoubtedly continue to affect higher education. But for the optimal exploitation of the potential of ICT for learning more is needed than just a further introduction of technology in an otherwise unchanged teaching and learning system. A systemic, holistic approach is called for, aiming at the transformation of the higher education system in such a way that it allows to deploy the best of what technology has to offer for a thoroughly innovated education and learning methodology.

- Blended learning is an art and a skill which needs and deserves to be raised to a higher level: learning blends must be developed professionally. A specific design skill is called for: learning design. At the same time scientific research is needed to build a fundamental basis for this design skill such as to make it evidence based. We plead for the recognition of learning design as a true domain of interdisciplinary fundamental and applied research. We suggest that each educational institution creates a central interdisciplinary department for educational innovation, in which four functions are to be integrated: fundamental research, development of tools and techniques, training and support for teachers and initiation of concrete innovation projects in collaboration with the teaching staff in the different academic disciplines (faculties and departments).

- On the international MOOC scene we believe that interuniversity collaboration at the Flemish and European level in the form of so-called DOCCs (Distributed Open Collaborative Courses) is the way to go. Interuniversity collaboration not only makes MOOCs financially feasible, it also significantly enriches them in contents and quality. Flemish Higher Education institutions are strongly advised to participate actively in the OpenupEd initiative led by EADTU and financed by the European Union. Through the attribution of credits to MOOCs and DOCCs for students in regular education we give them access to these exciting European and global developments and allow them to interact with professors and peer students all over the world (virtual mobility). With its Bologna Declaration and its ECTS (European Credit Transfer System) Europe has developed both the basic vision and the practical instrument for this virtual mobility.

- For the coordination and the support of the interuniversity collaboration at the Flemish level, as well as the collaboration with companies, professional organizations, government and other stakeholders, a central institute is called for. This institute should be governed by a board consisting of the vice rectors for digital education of the universities as well as delegates from industry, government and societal stakeholders. It is not only to promote and to support (technically and logistically) all forms of collaboration between partners, but it can also play a leading role in research and initiate and manage specific projects such as the fast creation of MOOCs or DOCCs as an agile response to emerging needs of society and industry. The Dutch SURF could be taken as a starting model. Also the existing collaboration between the Flemish universities and Dutch Open University is due for a creative rethink in view of the digital revolution, the convergence of on campus and distance education and the complementary expertise of the classic Flemish universities and the open university.

6. Some Personal conclusions

I now come back to the starting point of the project, which at the end appears to be one of its main conclusions: 'there is a need for a systemic vision on the optimal exploitation of ICT and the internet for the new learning of the 21st century'. It leaves me with a double question. First: did we go wide and deep enough in developing new insights that can be step stones and building blocks for this 'systemic vision?' Second: will the views and recommendations presented above actually bring about tangible progress in 'the optimal exploitation of ICT for the new learning'?

Let me start with the second question as it strongly affects the answer to the first one. It can in itself again a be split in two parts: a) have the presented views and recommendations a chance to be accepted and implemented by the authorities and people they are intended for, and b) if they are, will that lead to tangible and sustainable results? The first part will first of all depend upon the follow up actions taken after the publication of the project reports, a process which is going on right now. But for both parts we can learn lessons from the last twenty (!) years.

I take the liberty to refer to a chapter I wrote in 2007 [8] under the title 'A European virtual learning area, now or never?' The basic issue I discuss in that paper is the following. Most of the models for e learning we are discussing now (i.e.in 2007) were developed and even tested out in large scale pilot experiments (eg. coordinated by Eu-

roPACE) in the nineties. They never really penetrated in mainstream higher education and did not even show sustainable in corporate training. Most of the national virtual or digital universities that were founded around the beginning of this century (e.g. the Digitale Universiteit Nederland, the UK eUniversity etc.) did not survive. So why would it all work now? I quote

> 'In comparison with ten-fifteen years ago, there are some major differences, but some basic limitations remain. A first major factor of difference is technology, ... Academia at large has accommodated the basic (technical) elements of e Learning. A second major factor of difference is 'internationalisation'. International networking is high on the strategic agendas of universities ... Which basic limitations remain? There are first the intrinsic limitations of e learning as such. E learning is basically sitting in front of a PC or a projection screen, ... Secondly there is the basic motivation of 18-25 years old on campus students. Their first motivation is to have a five years 'sabbatical' before going into real professional life, and to make this sabbatical fulfilling and enriching in a number of ways. Their study in the strict sense is only one aspect of their sabbatical, the key objective of their study is the diploma and the key factor the confort and support they get to obtain it. Therefore, replacing lectures, labs and tutorials by effective ways of interactive e learning is not an option for them ... Thirdly there is the strategy of the universities. I had to learn the obvious truth that the very first goal of every university is the same as that of any organisation: to assure and extend its own existence ... So positive new trends and opportunities in learning are only supported wholeheartedly if they serve the interests of the universities and in particular 'this university' ... Nevertheless ... I see two positive trends on the scene of networked e learning in European universities: the 'restricted virtual learning areas' movement and the 'open virtual learning area' movement. In the former, universities carefully select or build their networks for e-learning as a tool for the implementation of their 'internationalisation' strategies . In the latter, universities follow the trend set by MIT to make their e learning courses freely available through the web. The two movements seem contradictory but are not necessarily in competition, as the first is about education and the second about course materials. '

Reading this all now, I realize that the example of a 'restricted virtual area' I had in mind was EUNITE, a network that has been dissolved a couple of years later. With the term 'open virtual learning area' I referred to the Open Educational Resources (OER) and 'Open Courseware' (OCW) movements. Many universities participate in these, which does not necessarily mean that OER are significantly used in their teaching practice. And finally, where I wrote that 'open virtual learning area' initiatives such as MIT's are about course materials and not about education, this is not at all the case anymore since 2011 and the outbreak of the MOOCs tsnunami. There is no doubt that the MOOCs - and the prestigious top universities behind them-have caused a breakthrough in the thinking about eLearning in universities all over the world. Did they bring about a disruptive change in the higher education system? That is quite another question, and many even doubt whether they will survive as such.

The goal of the above made critical reflections is not to succumb to defeatism but to learn from the past. In setting up new initiatives it is useful to understand which are the critical success factors and to see the technological and societal developments that allow us to be successful now in creating things that were not possible in the past. This brings me back to the first question: did we go wide and deep enough in developing new insights that can be step stones and building blocks for this 'systemic vision'? My answer is yes and no. It is yes for the short and intermediate term and the present structure of higher education. We have been very wise to stick to reality and I am confident we developed valuable and useful insights and strategies that will lead to concrete results.

My answer is 'not yet' for the longer term. I have the feeling that we are not yet fully aware of the implications of digital technology for knowledge as such and its creation, for global communication, for sharing and jointly and interactively creating knowledge, for the development of personalized learning contents and support, for independent and open learning, for learner support and assessment, for monitoring and adaptive control of learning processes (learning analytics). We still have much to learn about learning as such, e.g. how to stimulate 'deep learning'. Perhaps we stick to much to the model of today's universities and today's education which is still strongly based upon courses and teaching. Perhaps we need a paradigm shift and thorough mental changes among students, teachers, in society at large. How would the university look like if we invented it now? That sounds like a very imaginary question, but it might be a good idea to create such a pilot university. Or would one of the existing universities dare to take the risk of experimenting with a totally new concept?

7. Acknowledgement

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