

Chapter 1

Shaping the Curriculum in the European Higher Architectural Education Area

From the 2002 Hania Meeting it became apparent that there is significant divergence as far as the priorities of school curricula, the study systems and the diplomas awarded are concerned.

It was agreed that a common basis has to be established on which the European profile of each School will be shaped. It was also suggested that the particularities and special features of every school curriculum have to be protected and preserved.

For this reason it became evident that there is a need for: generating a more systematic knowledgebase of the state of the art of architectural education, in relation to the different types of architectural undergraduate and postgraduate studies in Europe; identifying the typologies of diplomas in architecture awarded by various institutions and their characteristics; finding out the directions adopted by schools of architecture that have recently restructured their curricula, and their priorities; articulating the intentions of the schools that have not altered their curricula; examining the possibility for constructive grouping of schools on the basis of their similarities or differences.

Introduction to the Session

Panel

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Ready to Start a 21st Century of Architectural Higher Education

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Introduction

At the Antwerp meeting of the European Network of Heads of Schools of Architecture (ENHSA, March 2003) the need was felt to get a European-wide insight in the current situation of Architectural Higher Education, especially in relation to the Bologna process and the emerging Knowledge-Based Society.

It was decided that each ENHSA Task Force would question the schools as to both the current situation and expected future trends. Each school received one package of questionnaires. In total 130 packages were sent and 52 were returned (40%). In 51 cases had the Curriculum Questionnaire be completed (39%). The returned questionnaires cover Northern, Western, Southern and Eastern Europe (Table 1). We are grateful that so many representatives of the Architectural Schools took part in this survey.

In this presentation we will summarise the results of the Curriculum Task Force. The management of the ENHSA made the subject ECTS (European Credit Transfer System) part of the inquiry of the Task Force on Mobility. However, it is the opinion of the working group on Curriculum that ECTS is also an essential means to design a curriculum, make it transparent, and make the workload of students the starting point for discussions on the content of curricula. The inquiry on the content of the curriculum that started in 2002 is not included in this presentation.

1. Size of the School

We distinguished six size categories, depending on the number of students attending the school:

- XS: less than 500 students
- S: 501 - 1000 students
- M: 1001 - 1500 students
- L: 1501 - 2000 students
- XL: 2001 - 2500 students
- XXL: more than 2500 students

The modus (most frequent class) is XS or less than 500 students in the school, and _ of the schools have less than 1,000 students, indicating the generally small size of architectural institutions for higher learning (Figure 1). One wonders if schools in the categories XS and S carry sufficient critical mass for a fruitful educational climate. Are they able to run a coherent research program? Is it possible for them to reach a multidisciplinary approach?

Table 1: The 52 schools taking part in the Curriculum Questionnaire of the European Network of Heads of School in Architecture

Country	School
Northern Europe	
Denmark (DK)	Aarhus, Copenhagen
Estonia (EE)	Tallin
Finland (FI)	Helsinki, Tampere
Lithuania (LT)	Kaunas
Norway (NO)	Oslo
Sweden (SE)	Göteborg, Trondheim
Western Europe	
Belgium (BE)	Brussels (Free University)*, Leuven, Limburg
France (FR)	Bordeaux, Clermont-Ferrand, Grenoble, Lyon, Nancy
Germany (DE)	Bochum, Karlsruhe, Regensburg
Ireland (IE)	Dublin IT, Dublin University College
Liechtenstein (LI)	Vaduz
Netherlands (NL)	Delft, Eindhoven
Switzerland (CH)	Lausanne, Zürich
United Kingdom (UK)	Belfast, Portsmouth
Southern Europe	
Greece (GR)	Athens, Thessaloniki
Italy (IT)	Genova, Torino 1, Torino 2
Portugal (PT)	Lisbon, Lusiada, Sedubal
Spain (ES)	Barcelona, Madrid, Valles
Turkey (TR)	METU Ankara, Gazi Ankara, Gazimagusa Cypres, Isparta, Istanbul Culture
Eastern Europe	
Hungary (HU)	Budapest*
Poland (PL)	Gliwice, Warsaw, Wroclaw
Romania (RO)	Bucharest
Russia (RU)	Irkutsk
Slovak Republic (SK)	Bratislava

* Empty questionnaire returned; no data in the retrieval

Figure 1: Size of Architectural Schools as measured from the number of students (n= 48)

XS = < 500 students;
 S = 501-1000 students;
 M = 1001-1500 students;
 L = 1501-2000 students;
 XL= 2001-2500 students;
 XXL= >2500 students

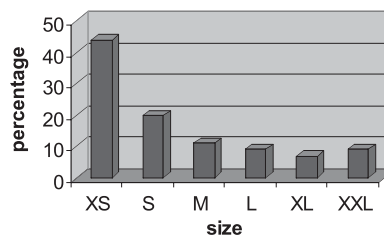


Figure 2: The Full-time / part-time staff ratio in 48 schools of architecture

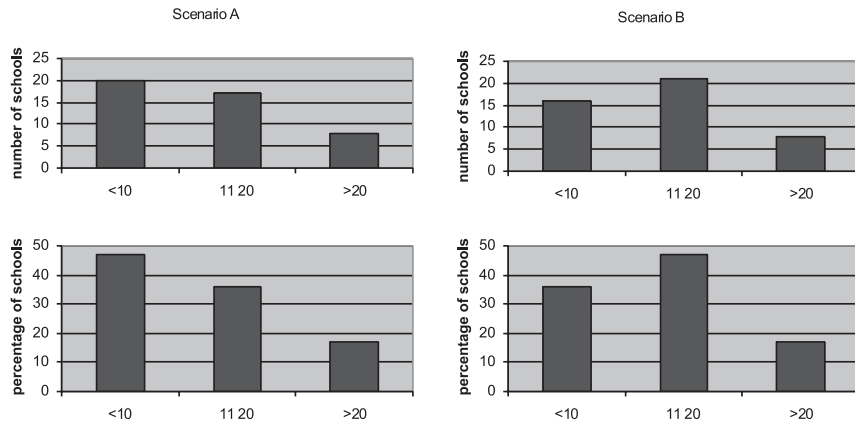
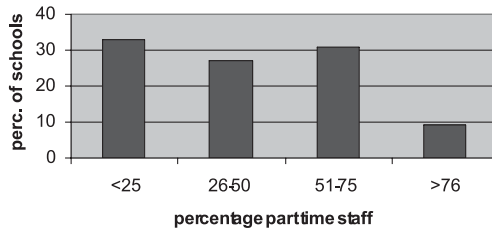


Figure 3: two different scenarios for calculating student-staff rates in 48 schools of architecture:
 A: permanent staff = 1 full-time unit, part-time staff = 0.4 full-time units
 B: permanent staff = 1 full-time unit, part-time staff = 0,2 full-time units

On the other hand: are schools in the categories XL and XXL able to run their education properly? Is mass education not a threat to quality in these schools?

2. Quality of Education

One of the main indicators for the quality of a school is the ratio between number of staff and number of students. From the study of Orbasli and Worthington we can learn, that 15 students per staff member is a benchmark for the 1st cycle of architectural higher education¹. If this ratio looks luxurious, we have to consider, that in Architecture commonly more staff is needed than in many other disciplines, because of studio and project work, and other intensive forms of teaching.

Unfortunately we are not well informed as to the current student-staff-ratios in the schools taking part in this survey. The questionnaires only gave information on the number of permanent (full-time) staff and part-time staff, not the size of the different positions. Four classes could be distinguished in the full-time/part-time ration: <25%, 26-50%, 51-75% and >75%. These classes show about the same frequency of distribution, with the exception of the >75% class (Figure 2). One school (Lausanne) has only part time-staff.

¹ Aylin Orbasli, John Worthington, Architecture and Town Planning Education in The Netherlands: a European Comparison, University of York, Institute of Advanced Architectural Studies, 1995, ISBN 0 904761 48 7, pp. 77 - 79

Table 2: Length of study program and final degrees in 50 schools taking part in the Curriculum Questionnaire of the European Network of Heads of School in Architecture

Country	Duration in years		Currently	Final Degree*	
	Currently	Future		Future	Future
Northern Europe					
DK	5		MA in Architecture / Diploma in Architecture		Diploma in Architecture / Master of Architecture
EE	5		Master of Architecture		
FI	7-9	7	MSc in Architecture / MSc in Landscape Architecture		
LT	6	6	MA of Architecture / MA of Land Management		MA of Architecture / MA of Land Management
NO	5.5		Sivilarkitekt / Diploma in Architecture		Master in Architecture
SE	5	5	Diploma in Architecture		Master of Architecture
Western Europe					
BE	5	5	Burgerlijk Ingenieur Architect / Architect / Diploma in Architecture		MSc in Engineering; Architecture / Master of Architecture / Architect
FR	6	5-6	Diploma in Architecture DPLG		Master in Architecture / Diploma in Architecture
DE	4-5	5	Diplomingenieur / Diploma in Architecture		Master of Architecture / Master of Engineering
IE	5	5	Bachelor of Architecture		Master of Architecture
LI	5		MSc in Architecture		
NL	5		MSc in Architecture, Building (and Planning)		MSc in Architecture and Building
CH	5.5-6	6	Diplôme d'Architecte EPFL / Diploma in Architecture		MA in Architecture / Master of Architecture EPFL
UK	5-7	5	Bachelor of Architecture / Master of Architecture / MA / MSc		Master of Architecture
Southern Europe					
GR	5		Diploma of Architect-Engineer		
IT	5	5	Laurea Specialistica in Architettura / Laurea in Architettura		Laurea Specialistica in Architettura del Paesaggio / Laurea Specialistica in Disegno Industriale / Laurea Specialistista in Architettura
PT	5-6		Diploma in Architecture / Mgr. Ing. Arch.		
ES	5-6		Diploma in Architecture / Architect		
TR	4 - 6	5-6	MA of Architecture / MA in History of Architecture / Diploma of Architecture / MSc in Building Sciences / Bachelor of Architecture / BA / Master of Architecture		Master of Architecture
Eastern Europe					
PL	5	5-6	MSc of Engineering in Architecture		MSc of Engineering in Architecture
RO	6	6	Diploma in Architecture		Master in Architecture
RU	6	6	Diploma in Architecture		MA in Architecture
SK	6		MSc / Master of Architecture		

* MA = Master of Arts; MSc = Master of Science

Table 3: Intermediate degrees and length of study program in 50 schools taking part in the Curriculum Questionnaire of the European Network of Heads of School in Architecture

Country	Duration in years		Intermediate Degree*	
	Currently	Future	Currently	Future
Northern Europe				
DK	3	3	BA	BA
EE	-	-	None	None
FI	-	3-4	None	Intermediate Diploma
LT	4	4	Bachelor of Architecture	Bachelor of Architecture
NO	-	-	None	None
SE	-	3	None	Bachelor of Architecture
Western Europe				
BE	2	2-4	Candidate Architect / Candidate Engineer	Candidate Architect / Candidate Engineer / Candidate in Architecture
FR	2 + 2	3	Diplôme 1er cycle + 2me cycle des études en Architecture	Bachelor
DE	2	3-4	Var-Diplom	Diploma / Bachelor
IE	3	3	BSc in Architectural Science	BSc in Architectural Science
LI	3	3	Bachelor of Architecture	Bachelor of Architecture
NL	3	3	BSc	BSc
CH	2 + 2	2 + 2	1er & 2me Pré-Diplôme	1er & 2me Pré-Diplôme
UK	3	3	BSc / BA (honours)	BSc / BA (honours)
Southern Europe				
GR	-	-	None	None
IT	3	3	Laureat in Architettura / Architect Junior	Laureat in Architettura / Architect Junior
PT	-	?	None	Not mentioned
ES	-	3-4	None	Bachelor
TR	2	2	College Diploma	College Diploma
Eastern Europe				
PL	3.5	3.5-4	Diploma-Engineer in Architecture	Diploma-Engineer in Architecture / BSc Engineering in Architecture
RO	-	4	None	Diploma
RU	-	?	None	Not mentioned
SK	4	4	Bachelor of Architecture	Bachelor of Architecture

* BA = Bachelor of Arts; BSc = Bachelor of Science

To get an approximation, we made assumptions for 2 scenarios to calculate student-staff-ratios.

A: part time staff = 0.2 full-time unit

B: part time staff = 0.4 full-time unit

Three categories of student-staff-ratio is distinguished:

< 10 students per staff member;

11 - 20 students per staff member;

> 20 students per staff member.

Depending on the scenario chosen most schools have 11-20 students / full-time staff unit, or less than 10 (Figure 3). However, the amount of students / staff is probably lower, since not all permanent staff will have a full-time position. We may conclude that at least 18% of the schools show an unfavourable student-staff ratio.

3. Duration of the Study Programme

At this moment the main group of schools have a curriculum duration of 5 years (22 schools). Another important group (13 schools) reported a duration of 6 years, a smaller group (4 schools) confer their final degree after 4 years. In addition 3 schools have a different duration: 5.5 years, 7 years, and even 7-9 years. (Table 2).

If we look at reported future patterns, there will be no important change, 5 years of higher education seems to settle as a standard, but we still have to discuss how to calculate architectural practice as part of the educational process. In a 5-year course there is hardly room for professional practice. It is questionable if practice should be part of the curriculum at all. This subject relates to the type of course program (vocational or academic), the final degree (MA, MSc, Master of Architecture, Architectural Diploma), and the qualifications and competences related to these degrees or diplomas.

4. Final Degree

In relation to the names of the final degrees, an extensive diversity exists. In addition to the general degrees MA (Master of Arts) in the Humanities, and MSc (Master of Science) in the Sciences, a number of Diplomas and Architectural degrees are given, including Master of Architecture (Table 3). The suffix 'in Architecture' is commonly added to the MA or MSc degree, in some cases 'Engineering' is also added. But how correct is it to interpret a Master of Arts as an 'artistic' degree?

Some schools offer more than one type of degree or diploma. They apparently offer both an academic and a professional trajectory.

Although a strong trend to award a Masters degree is visible, it is also clear that the Bologna evolution takes place at a varying pace in different countries. National legislature as to degrees and professional competences may be slowing this process down.

Southern-Europe has more barriers to demolish its current degree structure than other European regions. It looks as if Italy will stick to the Laureate-award. They may also consider the Masters qualification as a professional degree after the Laureat.

In one case a doctorate degree was reported after a course programme of 4 + 2 years

duration. This could better be avoided, since it does not meet international doctorate-standards.

5. Intermediate Degrees

The Bologna Agreement calls for a divided curriculum: a 1st 3-year Bachelor-cycle, and a 2-5 years 2nd cycle. In this respect it is interesting to see that half of the schools are currently offering an intermediate degree after usually 3 years of study. Most of them will continue to do so in the future, sometimes with a name change to adhere to the Bologna structure (Table 3). The patterns shown in the questionnaires conform with the statement summarising the Chania-discussion of 2002 that the Bachelor curriculum will settle as an independent stage of architectural education. France intends to replace its system of 3 two-year-cycles.

The Bologna evolution will shape both the Bachelor and Master phase into autonomous stages of the Architectural Curriculum, with each their own specific qualifications and competences. We have to face the possibility that students with a Bachelor awarded outside the Architecture domain seek entrance to the Master of Architecture program. This is part of the Bologna-game.

Does this mean that we need a new type of qualification to register as an Architect? One could state that to register as a professional Architect, one has to earn both a Bachelor and a Master with an architectural curriculum.

6. Admission to Architectural Higher Learning

Through the Bologna Agreement entry points to higher architectural education are (at least) twofold: the 1st year (Start of the 1st Bologna Cycle), and the 4th year (Start of 2nd Bologna Cycle). In the last case one needs to have been awarded a Bachelor degree or equivalent earlier.

However, most schools still imply that students start after secondary school in the 1st year of architectural education and go through both phases as if it is one integrated and combined curriculum. It appears that the Architectural Schools in the UK are most open to entry at other moments than the 1st year of the 1st cycle. This could be expected since the Bologna System was drawn after existing Anglo-Saxon-systems. It also means that many architectural schools in other countries will have to change their curriculum to a large extent and make it more flexible.

As to entry requirements for the 1st year (Start of 1st Bologna cycle), some schools reported entrance exams, sometimes organised on national level. Entry requirements concern abilities and talents for architecture (mainly skills in hand drawing). Warsaw indicates, however, that they will skip the hand drawing requirements in the future. For a number of schools a certain level of competence in mathematics and physics is requirements, but these subjects are part of the secondary school course package. The same is true for ability to use the local national language, or any other language the courses are offered in. In Liechtenstein practical experience in architecture is necessary to enter the school.

7. Characterising the Curriculum

Schools characterise their curriculum as:

- General / academic / classical;
- Specialised / professional / vocational;
- Studio based;
- Process driven / design driven / technology driven;
- Research based / research driven;
- Pragmatic on academic foundation.

Some schools mention a characteristic of content, such as landscape or multi media. Strangely enough town planning, urbanism or urban design are hardly mentioned. Perhaps we should discuss the position of the urban disciplines in an Architectural curriculum, as well as the town planners' profession among the architects.

The typology of schools, made by Orbasli and Worthington², and quoted in the paper on curriculum of last year³, is recognisable in the answer to the questionnaires. Orbasli and Worthington distinguished two main axes:

- Academic versus vocational;
- Artistic generalist versus technological specialist (Table 4).

Table 4: Focus Matrix of the Architectural Curriculum, after Orbasli and Worthington

	Academic Approach	Vocational Approach
Artistic generalist	Design Projects Architectural Theory	Design
Technical specialist	Design Projects Engineering	Practical understanding

Most schools combine characteristics. The current trend in the schools towards more research in the architectural curriculum (see also below) is absent in Worthington's matrix.

How can Worthington's typology be adapted to include characteristics such as research-driven or research-based (or, better, research-led?). Should we place schools with these characteristics in the academic categories of Worthington's typology, and leave the others in a vocational cell?

It is a well-known fact that the artistic Architectural Schools claim a research position on the basis of artistic research or 'research by design'. We notice the struggle of schools to cope with the different ambitions. Scientification of architectural design seems to be a widespread intention.

² Aylin Orbasli, John Worthington, *Architecture and Town Planning Education in The Netherlands: a European Comparison*, University of York, Institute of Advanced Architectural Studies, 1995, ISBN 0 904761 48 7, p. 50

³ K. Doevendans, J.Verbeke, J. Petric, *A European Curriculum in Architecture, how to organise and manage the knowledge of a dynamic subject*. In: *Towards a common European Higher Educational Area*, C. Spiridonidis, M. Voyatzaki, ed., Chania-Proceedings, 2002, ISBN 2-93031-090-, pp. 49-80

The philosopher Stephan Toulmin⁴ has made a distinction between a discipline (academic) and a profession (vocational). In his concept architecture is a profession on the one hand, and a discipline on the other. The interrelations between the two make up our research problem.

This makes another view on Worthington's typology possible. It could be used as a typology of course programs instead of schools as a whole. This view is based on the fact that all societies need both the artistic and the 'scientific' State-of-the-Art among their professionals. The Bologna Agreement opens up the possibility to have more than one type of Master. Architectural education should use this opportunity!

8. Structure of the Program

Most schools have a semester system, only two have trimesters (Eindhoven and Dublin IT). Some of them combine the semester-system with a year-system (examinations after one year). Modularised programs are rare. Half of the schools do not even foresee this structure for the future. It is hardly conceivable that we can implement the Bologna Agreement with its increased student mobility without a modularisation of the education programs for Bachelor and Master. There surely is still a lot of work to be done on European and national levels.

But even if we would all establish semesters, and all have a flexible, modularised program to answer increased student and teacher's mobility, another problem remains. Academic calendars start at different dates among the schools in Europe. Calendar-coordination will be necessary. We probably have to design a kind of meta-roster? For instance, a roster based on 6 periods of 6 or 7 weeks a year. Such an international meta-roster could lay the foundation for international, modularised program's in architecture, offered by networks of schools. Every school functions as a kind of 'centre of excellence' and offers specialised modules to students from other schools. In the end this could even lead to distributed educational programs and Joint Degrees, as initiated and supported by EU.⁵

9. Specialisations

A minor group of schools offer specialisation degrees, sometimes as supplementary awards (Table 5). There appears to be a strong tendency towards specialisation and obviously this will have an impact on the post-graduate stage. The once undivided curriculum will diverge in many route ways to specialisations. How will these specialisations be related to the main architectural curriculum? Are they still linked to a common kernel? Is a common kernel still possible, as suggested in the conclusions of the Chania-discussions of 2002?

10. PhD and other Advanced Level Studies

Almost all schools offer advanced level studies. Exceptions are the Fachhochschulen in Germany, the French schools, some of the Belgian and Turkish schools, and the one in

⁴ S. Toulmin, *Human Understanding*, Vol. 1, Oxford, 1972

⁵ See for an overview of types of Joint Degrees: Marc Lobelle, Effect on the students mobility of the Bologna Process, Cluster Newsletter 36, March 2003, pp. 4 – 11, www.cluster.org

Liechtenstein. Some of the French schools indicate that they will offer advanced level studies in the future.

Admission requirements for advanced level studies generally are a MSc degree, sometimes a professional degree in architecture. The duration of the advanced level studies in the case of PhD-studies or equivalents differs from 3 - 4 year, sometimes 5 or 6. Other schools also offer 1 of 2 years postgraduate courses, mostly professional Master-courses; sometimes courses that are part of, or are the first step in a continuing PhD-program (for instance MPhil). Note that in the Bologna Agreement the final degree of the 2nd cycle is a doctorate. The tracts for Master and Doctor together form the 2nd cycle that should be 5 years of full-time education long.

In most schools postgraduate courses lead to a PhD degree, or another Doctorate Title, such as Doctor in Architecture. Students in this stage of study are designated as PhD-students, doctorate or doctoral-students, or in general: post-graduate students. In some cases students are called research assistants, and in the case of the 1-2 year courses: master-students.

Table 5: Specialized Degree programs mentioned by the heads of school and placed in alphabetical order

Current Programs	Additional Future Programs
Architectural Culture Diploma	Architectural Renovation
Building Technology	Building Construction and Materials
Ecological Planning	Civil Engineering
IT-related design	Computer Science and Artificial Intelligence
Real Estate and Housing	Consciousness of the Ethical Foundation of Architecture
Restoration Diploma	Free hand Drawing
Urbanism	Heritage Protection
	History and Theory of Architecture
	Human settlements
	Industrial Design
	Interior Design
	Modelling and simulation of Building Spaces
	Physics of the Built Environment
	Property Management
	Rehabilitation
	Studio Teaching
	Structural Engineering
	Sustainable Design
	Urban Planning
	Wood Construction

11. The Value of Research

The subject of research in architecture has been touched already, but much more can be concluded from the survey. The tendency of schools to denote the meaning of research makes this into an important aspect of the curriculum.

Research is viewed as part of the elaboration of PhD- and doctoral educational and research programs, and also in connection to the research position in Master programmes.

69% of the schools currently offer research based programs. These schools indicated that research has a strong influence on architectural education. Schools were asked to rank the impact of research on the general educational program on a scale from 1 – 5. We asked for a ranking concerning the present situation and the expected future situation (Table 6). Currently 57% of the schools scored 3 out of 5 or higher in evaluating the role of research. For the expected future this increases to almost 90%! The trend towards more research is obvious in all European regions. Eastern-Europe appears to be most research-oriented.

Most schools share the opinion that research is important, but ideas how to link this to the Master program differ. Some schools want to keep research strictly part of PhD studies. Others see a relation with the Master-program. In one view, research should be executed by staff members only, probably supported by PhD students. Its results are introduced into the Master program through the regular lectures of these staff members. Other schools consider Masters thesis and studio work part of architectural research.

12. Research Supervision and Organisation

We also asked how supervision of research was organised in the schools. Heads of School were given the following options:

- Individual supervision
- Studio work
- Research groups
- Research programs

Most answers consisted of combined types of supervision, especially individual supervision (mentioned by 23 schools) and research groups or teams (20 schools). In 10 schools the research was organised in research programs. Only 4 schools mentioned the studio as main framework for the research, and in very few schools (3) research is only present as part of the general curriculum, lectures, workshops, etc.

13. Research Issues

A number of Research Subjects were identified by the heads of school. They are distributed over the humanities, social sciences, natural and applied sciences, indicating the multidisciplinary nature of the architectural domain (Table 7).

In Southern-Europe, and also in France, there is a strong emphasis on: Restoration, Heritage, Patrimony and Preservation, a mix of humanities, social studies and applied science. Schools in the Western-European region often mention sustainability (Social, Natural & Applied Sciences). Also research on mobility, transport seem to be important issues. In all regions of Europe History and Theory of Architecture (Humanities) is seen as an important research issue.

Table 6: Research impact on architectural education as scored by 39 schools, now and in the future; 1=lowest score; 5= highest score. Information for Finland and Hungary was not available

Country (number of schools)	Ranges of Scores given	
	Present Situation	Future Expectations
Northern Europe		
DK (2)	1,3	3,3
LT (1)	4	4
SE (2)	4, 4	4, 4
NO (1)	3	4
EE (1)	1	3
Western Europe		
CH (2)	5	5
NL (2)	4, 3	5, 4
UK (2)	3, 3	4, 3
DE (3)	1, 3	3, 4
IE (2)	2, 3	4, 4
FR (5)	1, 3, 2, 2	3, 3, 2, 3
LI (1)	1, 1	1, 3
BE (2)	1	2
Southern Europe		
TR (5)	4, 4, 4	5, 5, 4
IT (3)	3, 4	3, 4
GR (2)	2, 2	2, 4
PT (3)	1, 3, 3	1, 5, 3
ES (3)	1	3
Eastern Europe		
RU (1)	4	4-5
RO (1)	4	4
SK (1)	4	4
PL (3)	3, 4	3

Table 7: Research Subjects for the Architectural Curriculum as mentioned by the Network of Heads of Schools of Architect as distributed over the different academic disciplines

Research Subject	Academic Discipline		
	Humanities	Social Sciences	Natural and Applied Sc.
Architectural practice and Management		x	
CAAD, Architectural Databases and Design Methods		x	x
Comfort, acoustics, energy, and related subjects		x	x
Mobility, transport and infrastructure			x
Restoration, Heritage Protection, Preservation	x		x
Sustainability and ecology in architecture, urban and environmental planning			x
Technology and Building Science			x
Theory and History of Architecture	x	x	
Urban Development and Landscape		x	
Vernacular and Regular Architecture	x	x	

14. Research Perspectives

The data collected on research value and subjects in the questionnaire of the Curriculum Task Force are tentative. Since the meaning of research is generally seen as of increasing importance, the ENHSA should deepen this subject and reflect on a research strategy.

In the future research programs, internationally organised, will become more and more important. Local research teams or groups will be too small and narrow. International research programs are especially of interest for the XS and S-schools. Another advantage of joint research could be that such programs are able to get funding from the European Commission. In that case research subjects should fit into the themes identified by the EU, or, even better, that architectural issues are placed on the agenda of the EU-framework programs. EAAE and ENHSA could try to stimulate this, and make architecture part of scientific culture. In order to keep the typical architectural design culture, quality criteria for design related research and scientific output also have to be elaborated.

15. Summary

The ENHSA Task Group on Curriculum succeeded to collect data from Architectural Schools located in all European regions. The majority of schools have less than 1000 students, and about 1/3 even less than 500.

There appears to be a large variation in degrees and organisation of programs. It has been shown that the 'Bologna development' varies in speed from country to country, and sometimes even within a country.

However, consensus seems to exist that in the near future the academic education in Architecture will always consist of both a Bachelor and a Masters cycle. Since Bachelor Degrees outside the Architecture domain may also give entrance to the Master Program, a standard Master Curriculum is not possible within Europe anymore.

The Master stage of education may be viewed as a fork. The future student can choose a professional degree (e.g. Master of Architecture) or a scientific degree (e.g. Master of Science of Masters of Arts in Architecture)

Since most of the Architecture Departments in the European Institutions of Higher Learning are small, and master programs will diverge to a large extent, it is clear that a flexible, modularised program has to be distributed over a number of schools. Such a development also opens the opportunity to develop international Masters programs and joint degrees, as initiated and supported by EU. The programs can cover the range of educational profiles described in the typology of Orbasli and Worthington.

As to research practice, this will mostly be a part of the scientific master curriculum and the doctorate (PhD) curriculum. The student will do the thesis work in a community of researchers, usually not in a studio-environment, and related to international EU-relevant research programs, and obtain a PhD title after completion of the work. The usefulness of a special doctorate in architecture has to be considered, but is not self-evident if we consider the EU-research themes.

The mission of EAAE / ENHSA should be:

- i. To guarantee that professional Masters in architecture have completed both the architectural Bachelor and the architectural Masters Program;

- ii. To get architectural research on the EU-agenda;
- iii. To draw up the quality criteria for research and scientific output in architecture;
- iv. To clarify the relations and differences between professional and scientific routeways in architecture in the graduate phase of education.

Meta-University Fosters Internations Exchanges and Collaboration by Joint Master-Programs

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The META-University is a way forward to facilitate international collaboration. It makes the course structures more transparent, facilitates student exchanges and develops joint modules. The pilot between TU Eindhoven, Strathclyde University and Hogeschool voor Wetenschap & Kunst, Sint-Lucas Architecture is now extending all over Europe and is even active in projects with South- and North-America.

Introduction

International activities become more and more important for universities. Kees Doevendans initiated the META-University in 2000. During the first year, the three pilot partners had a lot of discussions about the way forward. The first discussions were on structures and practical issues. After some time when more and more people got involved, the focus shifted to content and to complementary expertise and capabilities. The consortium is now extending and benefiting from the activities in several European funded projects. This contribution tries to report on the experiences and benefits of the project partners.

Due to the increased flow of students under SOCRATES, teaching and administrative staff have to help and guide outgoing and incoming students throughout the year. Information is scattered and frequently incomplete or outdated. Students come and go at different periods of the academic year. The META-University wants to facilitate the exchange of information by creating a flexible web-site: <http://www.metauniversity.tue.nl>.

The international META-university is a network of universities and design schools of Architecture and Urban Planning. The Schools agree to offer part of their existing activities in the form of international design workshops and theoretical modules open to the students in all schools of the network. This can be achieved by using a common web-site as a way to make the offer known. META-University has no commercial aims, its sole purpose is to stimulate international exchange and collaboration.

Combining the abilities of the member universities and the possibilities of their respective locations through an exchange of students and staff will be a key factor in META-University. We envisage META-University as a network of universities with activities situated in real space. This network is supported by the ever expanding possibilities of cyber space. Thus META-University will combine the best of both worlds. It is important to emphasise that META-University is not a virtual university; its activities take place in real locations.

All the workshops and courses take place in 'real space' on the locations of the members universities and under their full control. Staff and Students also meet each other in 'real space'. This concept of a META-university is founded on the conviction that, although modern communication offers invaluable new perspectives, nothing can replace real

experience and real contacts. In this concept the web-site is just a tool for communication, for assembling the different offers and for exploring areas of common concern. The aim is to make the best of both the shared interests and the individual qualities of the member schools.

Joint Masters

The META-University primarily focuses on the masters, fourth and fifth year of education. In most cases these Master years offer enough flexibility to the students to follow some well-composed modules with another university. Very soon, it became clear that there was a need for a deep and content-focussed discussion between the partners of the META-University. This led to the idea to create 'Joint Masters'. These were intended to reflect the joint competencies of the partners. These 'Joint Masters' are intended to stimulate collaboration between staff (they will be modules to contribute to the modules in which they have expertise) and help the students prepare for their diploma work. When they stay for one semester at another university and follow one of the modules and later on participate in one of the workshops organised by the consortium, they will receive (in addition to their diploma) a certificate of the META-University partnership.

These joint modules and 'joint masters' are based on four basic agreements between the partner universities: universities must respect the META roster for their calendar, courses are in English, results are transferred using the ECTS-system (see annex 1) and there is mutual recognition of student efforts. This required long preparations and extensive discussions.

As the Master programs are connected to research activities, the META-University also benefits from the activities of the USO-BUILT (User Orientation and the Built Environment) Doctorate School which was started in 2001. This PhD-network aims to develop European PhD Networks as foreseen in the Bologna-Process. See <http://www.uso.tue.nl> and Annex2.

Extension

Since the start of META-University, the partnership started to extend as many other Schools of Architecture, Urban Design or Planning saw the benefits of the system and of being part of the consortium. Applications from Göteborg, Lille, Rome, Warsaw and Weimar were approved. All these universities benefit from the high quality exchanges and collaborations. The European Union funded the development of a Joint Master of these universities on 'Planning and Design of the Post-industrial Landscape'. Modules within this Joint Master-program are:

- Explorative Architectural Design;
- Collaborative and Information Design;
- Sustainable Planning and Design;
- User-Oriented Planning and Design;
- Theory of the Post-Industrial Landscape;
- Architectural Heritage and Preservation of the Built Environment.

The modules are supported by international workshops.

EU-USA collaboration

Also from outside Europe there is increased interest in the activities and quality of the META-University. The pilot partners applied for an EU-USA project, funded by the European Commission. From the US-side the partners consist of the University of Cincinnati, North Carolina State University, and the University of Michigan. The project started on November 1, 2002 to appreciate similarities and differences in approaches and content of the curricula. Students will benefit from expertise not available at their home universities. The partners will benefit from increased interaction within the consortium and will develop ongoing faculty exchanges and research collaboration. Joint workshops will complement the implementation of the 'joint masters'.

Alfa-collaboration

The pilot partners together with the University of Seville also have a project running with universities in South-America. The Alfa-project Archinet collaborates with the Universities of Buenos Aires, Havana and Rio de Janeiro. The project aims to prepare for consortium Masters degree in Architecture. The educational systems and the access to the profession in the different participating countries are compared in order to develop a 'Joint Masters'. It will require a lot more effort in order to realise a base for mutual recognition. After this students will be exchanged and the META-University will benefit from a world-wide co-operation and exchange.

Quality control

Due to the fact that modules are realised in collaboration between different partner universities, META-University sets up automatically a system of peer review, discussion and the application of the best expertise in the relevant field. This is especially important as it is almost impossible to have the top level in each sub-field.

Conclusions

The META-University is a unique collaboration project in the field of Architecture, Urban Design and Planning. It brings together the top quality in knowledge and design in order to realise international 'joint masters'. After many years of preparation, it is expected the first of these modules will be running from 2003-2004 on. With the META-University, the partners are ready for the ERASMUS-World program of the European Commission. Preparations during many years have led to intense and productive collaboration between the partners in the consortium. This has spread to North- and South-America and is disseminating the idea of a World-Wide Educational Space.

Annex 1

Johan VERBEKE and Nele de MEYERE, Sint Lucas Architecture, Brussels-Ghent

The European Community promotes study abroad as a means of improving the quality of academic cooperation bringing benefits to students and higher education institutions.

Studying abroad can be a particularly valuable experience. It is not only the best way to learn about other countries, ideas, languages and cultures; increasingly, it is an important part of professional and academic career development.

Students envisaging a study abroad will be looking for:

- study programmes which are relevant to their final degree,
- full academic recognition which ensures that they will not lose time in completing their degree by studying abroad.

To help students make the most from their study abroad, the European Commission has developed a European Credit Transfer System (ECTS), which provides a way of:

- measuring and comparing learning achievements, and
- transferring them from one institution to another.

ECTS credits are a value allocated to course units to describe the student workload required to complete them. They reflect the quantity of work each course requires in relation to the total quantity of work required to complete a full year of academic study at the institution, that is, lectures, practical work, seminars, private work -- in the laboratory, library or at home -- and examinations or other assessment activities.

In ECTS, 60 credits represent one year of study (in terms of workload); normally 30 credits are given for six months (a semester) and 20 credits for a term (a trimester).

ECTS credits are allocated to courses and are awarded to students who successfully complete those courses by passing the examinations or other assessments.

How does ECTS work?

The main tools used to make ECTS work and facilitate academic recognition are:

- The *information package*. Institutions which want to use ECTS produce an information package, updated annually, in which they describe the courses available at the institution. It provides general information about the institution, its location, student accommodation, administrative procedures necessary to register and academic calendar.

Good course information is essential to prepare serious study abroad and descriptions covering the content, prerequisites, mode of assessment, time unit, type of course, teaching and learning methods employed and ECTS credits allocated are all included in the information package, along with a description of the department offering the course. Details of examination and assessment procedures, the institution's grading scale and the structure of the curriculum of the degree are also included. The information package is produced in both the national language and in a second

Community language. They are circulated to partner institutions for students and professors to consult and use in planning study abroad programmes.

- The *student application form* is used for informing the host organisation of coming students and for confirming the sending university the student is welcome.
- The *learning agreement*, describes the program of study abroad and is drawn up by the individual student and institutions involved before the student goes abroad.
- The *transcript of records*, shows the learning achievements of the student prior to and after the period of study abroad. The transcript of records show for every course taken by the student not only the ECTS credits but also the grade awarded according to the local grading scale and the ECTS grading scale. The combination of the local grades and the ECTS credits and grades represents qualitatively and quantitatively the performance of the student on the courses at the host institution.

What is the ECTS grading scale?

Examination and assessment results are usually expressed in grades. There are many different grading systems in Europe. To help institutions translate the grades awarded by host institutions to ECTS students, the ECTS grading scale has been developed. This provides additional information on the student's performance to that provided by the institution's grade, but does not replace the local grade. Higher education institutions make their own decisions on how to apply the ECTS grading scale to their own system.

What does ECTS offer to higher education institutions?

ECTS creates curriculum transparency by providing detailed information on the curricula and their relevance towards a degree. ECTS helps academics to make academic recognition decisions thanks to prior agreement on the content of study programmes abroad between students and their home and host institutions. The use of ECTS can also be a catalyst for reflection on course curriculum structures, student workload and learning outcomes. With ECTS, higher education institutions preserve their autonomy and responsibility for all decisions concerning students' achievements, without amending existing course structures and assessment methods: all courses and assessments are those which are normally taken by regular students at the host institution.

Annex 2

Kees DOEVENDANS, Eindhoven

Johan VERBEKE, Brussels-Ghent

USO-Built is a distributed Graduate School under the CLUSTER (www.cluster.org) umbrella with its own aim, high-quality research and educational programs. It focuses on PhD and MPhil-level programs, concerns the technological domains of science aiming at implicit sustainability (= sustainability perceived as a normal quality of design) for the Built Environment in its fullest sense, indoor and outdoor, and is directly User-Oriented. The environment is viewed as a technological and designed environment with major influence on quality of life. From the design point of view the space of everyday, the environment of most people's lives, is the focus of USO-Built.

The participants of the network:

- Agree on transfer and expertise;
- Pool excellence of participating universities;
- Share specific competences and knowledge;
- Create transparency; Elaborate quality procedures and execute peer reviewing;

The school is a distributed organisation, held together by:

- A high-quality, focused research and design program meant to educate young, creative, and internationally oriented researchers, architectural or urban planners and designers;
- A virtual communication centre within the facilities of the meta-university;
- Self-organising international research and design units, each with at least one moderated e-mail discussion list;
- Twice yearly PhD-conferences and regularly recurring workshops that rotate among the partner universities;
- International juries for the assessment of research plans, design plans, and theses completed for the MPhil or PhD degree;
- Specialised courses given by unique centres of excellence among the partner universities.

More than 21 universities participate at this moment. The school is coordinated by TU Eindhoven.

Mission of the school is cooperation of European researchers and educators active in each of three research dimensions and in a limited number of user-oriented competence areas pertaining to the built environment, to reach implicit sustainability of society. Promoting the domains of excellence of each partner-university is an additional aim.

Research dimensions

The three dimensions are:

The Functional dimension.

This dimension concerns mechanisms and focuses on functions and adequate use of the built environment in human terms such as good health, comfort, well-being, safety, and sustainability.

The Structural dimension:

This dimension concerns context exercised on a macro-level to explain phenomena in the light of technological innovations, (shifting) policies or market forces, in short the socio-economic level.

The Intentional dimension:

This dimension concerns motives and explains phenomena in a chronological-biographical sense as a result of experienced needs, carried motives, expressed preferences, decisions taken and completed actions of individual persons in time.

Research

The main activity of students, post-doctorate and research fellows is research of the Built Environment or Architectural Design. This is essentially an individual activity, but with a strong teamwork dimension. Students should earn at least 75% of minimum number of prescribed ECTS units through these activities. A Task Force has answered the questions concerning academic quality of output of an Architectural Design work. (See www.uso.tue.nl/archives)

Research programming has started with the collection of MPhil, PhD and post doctorate /research fellow projects as were offered by the universities taking partnership in USO-BUILT. International Research Units (IRU's) have been formed, and projects were classified in these IRU's, after a thorough check for user-orientation and built-environments relevance. Point of departure for IRU formation were the research dimensions(see above).

International Research Units

The following International Research Units are part of USO-Built:

1. Post-industrial Landscapes
2. Users, Managers and Producers
3. Built-in Quality of Life
4. Information Design.

Overview about European Doctorates in Architecture

Stéphane HANROT, of the EAML, Marseille, Chargé de mission EAEE

This paper tries to have an overview about European doctorates, in a situation that moves fast, that is neither stable nor homogeneous.

The existence of doctorates in architecture is not shared equally throughout the different European countries. The proceedings of the Delft conference (1996) entitled "doctorates in architecture" show that a country like Italy has doctorates in architecture for a long time (even when "research doctorates" were rather new) while France had no doctorates, even though an architectural research existed since a long time, as long as in Italy [Doctorats, 1996].

The 1996 conference emphasised that the question of doctorate is dependent on the question on the nature and specificity of architectural research. Many papers were focused on ontological and epistemological points of view. Since this conference, other discussions came up: how to make European doctorates? In what context will such doctorates be possible?

By saying that all these questions are answered, optimistically speaking, but things have moved. This presentation will try to explain how.

What is the nature and the legitimacy of architectural research? An epistemological progress

How to make architectural research not dependent on a "host discipline" as history, philosophy, and technical science? Is design a possible heuristic for research?

Epistemological debates have arisen about architectural discipline and research. It appears that a distinction has to be made between specific research that refers to an object of study and to methods that belong to the architectural discipline, and, on the other hand, crossed architectural research that links architecture to other disciplines [Hanrot, 2000].

The conference "Research by Design" in 2000 in Delft has been a step in the definition of the specificity of architectural research. Nevertheless, the role of design within architectural research is not yet clear. The work developed by Halina Dunin-Woyseth is really innovative as it proposes an epistemological specificity within "profession of the making" as medicine. Architectural research having, at this point, to invent its own domains and resources of research, not only in convenience with the reference of natural sciences or human sciences [Dunin, 2001].

These ideas show the new questions that have been emphasised by the ARCC/EAEE conferences in Paris (2000) and Montreal (2002). What are the scientific exigencies of architectural research? What about relationships between research and practice? It seems that if there is not a general clarification, the space of research opened and proposed these last years allows architectural discipline to be more self confident in the academic context.

How to do Doctorates? European Doctorate networks

A big change happened when European doctorate networks were implemented some two or three years ago. The "Millennium Project" gathering the Nordic countries, USO-Built driven by Eindhoven University, and Architectonics by Barcelona, are networks that are based on European partnerships and are involved in research and doctorates. This approach gathers highly competent professors and creates a real dynamic interaction between students. In some networks workshops are hosted by different universities every two months. Seen from the outside, this network organisation is very attractive and helpful to reinforce a fragile discipline.

As the cost of this kind of network is high, how will these networks persist when European funding stops? What is the benefit for research and pedagogy in comparison to the heavy administrative work that this European funding implies?

What context for doctorates? Sorbonne and Bologna's declarations.

A major factor for change is the implementation of the new European space for Higher education. Debates have started about Bachelor and Masters cycles and many schools have modified their own organisation to fit in the European frame. Others are entering the process with resistance as in Greece by refusing the bachelor level, or with inertia, as in France, because of a previous pedagogical reform, in 1998, that is not compatible with the Sorbonne Declaration. The doctorates cycle is not implemented with a strong will, as we have seen at the Chania Meeting of Heads of Schools [Chania,2002].

If we come back to the declarations, it appears that the Sorbonne declaration is clearer than Bologna's one. La Sorbonne's declaration says: "In the graduate cycle, there would be a choice between a shorter Masters degree and a longer Doctorate degree, with possibilities to transfer from one to the other. In both graduate degrees, appropriate emphasis would be placed on research and autonomous work."

The Bologna Declaration states: "Adoption of a system is essentially based on two main cycles, undergraduate and graduate. Access to the second cycle shall require successful completion of the first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle shall also be relevant to the European labour market as an appropriate level of qualification. The second cycle should lead to the Master AND/OR doctorate degree as in many European countries."

Depending on how one considers 'and/or', the study organisation differs. The "and" suggests that a student awarded a Bachelor can first enter a short cycle Master (+2) and, after that, a doctorate long cycle (+3). That is the Anglo-American system. If you consider the "or", the student must choose after the baccalaureate between a short-cycle Master or a long-cycle Doctorate, (the scheme shows the two different interpretations).

In the end the question is: what is the common way to enter a Doctorate in architecture:

- a. by having a Bachelor in architecture? Or
- b. by having a Master in architecture?

Starting from that point, different questions arise:

- Will the title of "architect" be obtained by a doctorate or only by a Master (solution A)

- What about interdisciplinary and the ability to enter a Doctorate in architecture coming from a bachelor from one an other discipline than architecture, when the student does not want the architect title but only that of researcher in architecture (Solution A and B)?

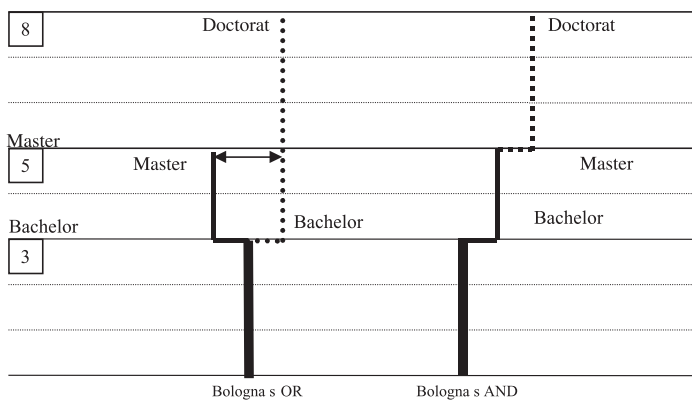
Other questions related to the content of studies follow these structural questions:

- on what basis a Bachelor student will be able to choose between a long cycle Doctorate and a short cycle Master if he/she had no experience in research previously (Solution A)?
- Is a specific course necessary to inform the student on what research is, to help him in his choice: a Bachelor cycle (Solution A)? or a Master cycle (solution B)

In the end, the question is also to define the relationships in between doctorates and professional activities:

- Will the doctorate be a key condition to enter architectural education? What about the place of practitioners within the schools of architecture?
- Will professional specialities emerge that could introduce research skills in architectural offices?

It would be vain to try to answer these questions up to now. Work has to be done. It will be done on of the creation of links between schools of architecture. The doctorate networks seem very efficient to try and to experiment with different systems. It could be argued that the epistemological debates that these networks bring out about the nature of architectural research, and the position of design in such a research, will become references for the community. Consequences are that schools, which are not implied yet in these networks will follow the others and will have to accept their proposals. On the contrary, Italian schools that have performed their doctorates and participate in these networks will be a reference to the others.



Scheme about the Sorbonne and Bologna declarations, and variations on 3_5_8

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Competence on the Art of Appreciating what is Educationally Significant

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The little story I use as an introduction is not meant to mock the academic and theoretical discussion on the sense or nonsense of competence, that is going on in the Lowlands down by the North Sea. Nevertheless, my story clarifies something.

"Last year I hired a young architect for my small architectural firm - 24 years old, fresh from school. We accepted the rather modest assignment of renovating the attic of my doctor's house. The pitched roof of this house dating from the fifties harboured some interesting and adventurous space. Measuring this space was one thing, but redrawing it was the ultimate challenge to my trainee, since in the course of his architectural training, he had chosen to follow a path on which he would mainly be confronted with the architecture of the purest minimalist boxes. Now, when the time had come to do some calculations, he scratched his head and asked me how to calculate the surface of one of the trapeziums. Yet, his first year's curriculum included mathematics, so what do I conclude from this? If he did not remember the formula, he could have deduced it anew! Or he could have looked in the formula-pocketbook. But he did not: he just asked what he wanted to know!"

So what does this story teach me about curricula and competence? Although the curriculum contained mathematics, it did not guarantee that my trainee was a sharp and quick calculator.

He did not show the competence to remember mathematical knowledge, he neither showed the competence to deduce mathematical formulas nor the competence to undertake some simple research. What he did show was his competence to communicate. To solve a mathematical problem he used a competence that he did not - I presume - acquire in his mathematics'course, and most probably neither in his school of architecture.

My conclusion is that, when thinking about architectural education and bachelors and masters, we should start with the skills we wish our students to display. From these skills we can then conclude which learning paths we would like to be developed. When reflecting on education, I do not think that "curriculum" is still the most important factor. All the more since when working throughout Europe as an architect, your client does not ask you which curriculum you worked through, he wants to know what your skills are, which services you or your firm can offer him. You could reply that the architect's main competence should consist of - or should I say, enjoy - the ability of making a good design and producing quality architecture. Okay, but this is too general a competence to be operational in architectural education. We will have to dig deeper.

As architects, we have mostly been active in architectural education in our own firm: learning by doing, offering the students a good brief in a challenging spacial, social, cultural and economic context. Thinking of an educational approach in design was not our strongest "competence". The studio's of many of my colleagues today are very similar

to the ones I attended in the sixties! As Aldo Van Eyck mentioned during his RIBA-conference in London in 1981, I would like to repeat in the architectural education context: "Open that window there, and let some fresh air in ". It is my personal belief that we can learn a lot from education theoreticians, and of other disciplines. As Bernard Tschumi and Jean Nouvel plead for in architecture, let us stop circling in the centre of architectural education as we have always known it and start looking for inspiration around the edges.

Dig deeper! How to dig deeper?

We should agree on the notion of competence itself.

We shall have to define what general professional skills a bachelor and master in architecture should possess, elaborate a method to think them out and write up more specific skills, we shall have to create educational paths to develop these skills and finally we should decide on how skills will be assessed.

I will not and cannot offer you the bible in these matters, just some modest ideas.

Competence

Definition:

Competence is a compilation of skills, attitudes and underlying cognitive elements, offering one the opportunity of performing tasks that are substantial to a function or a role.

Method:

Step 1: Gather information about the work situation.

- Define the professional areas and contexts in which to formulate the skills
- What is specific to the work situation of a beginning practitioner?

Step 2: Work one of these work situations out.

- Which process is the beginning practitioner going through and which activities are taking place?
- Define the different phases or activities

Step 3: Components in the formulation of competence

- Context
- result / products
- processes, activities
- resources
- parties involved
- problems
- attitude
- level of independence

Step 4: The competence is formulated

Example

The competence of drawing up a brief for a building

Context: an assignment to build a ...
(Professional domain: architecture)

Product: a list with functional parts and how they are related to one another, with an addition of information concerning all kinds of parameters (physical, psychological, socio-cultural and economical parameters) / a diagram visualising the parts and their relations

Processes:

Gathering and processing the information
Confronting the information with the client's vision
Mapping the criteria to define the parameters
Establishing the parameters
Drawing up the list and the diagram.

Resources:

The statement of the client's mission
Literature and similar projects, legislation

Parties involved:

Clients, users

Problems:

The client's lack of vision
Lack of unambiguous information
Disagreement between parties

Attitude:

Research-mindedness
Using professional knowledge as far as parameters are concerned
Communication skills / ability to empathize
Negotiation skills.

Level of independence

Complex cases: teamwork

Step 4: The competence is formulated

A beginning practitioner is able to establish a brief for a building, based on the communication with the client and the users, taking into account several research-based parameters. He/she possesses the skills to negotiate and present the ideas, defined in the brief, through language and image.

The example shows that writing up a competence shows us the complex areas of knowledge, attitudes and skills the practitioner is supposed to be able to move in.

Thinking in terms of the practitioner's competence forces us to cross the traditional barriers between the different parts of a curriculum. If we want to develop these skills, we will have to confront the challenge of designing educational paths, that guarantee that our goals will be reached. Deciding on, choosing of, appreciating what is educationally significant may partly be based on scientific knowledge. The complexity and the richness of meaning, the different layers a competence may contain, make reflecting on and defining of competence a demanding activity, requiring the artistry Prof. Habraken spoke about yesterday. It is a challenge to our educational connoisseurship.

Appendix: General skills for bachelors and masters in architecture.
First sketch.

BACHELOR	MASTER
Act in a conscious and critical way towards images on the level of the building and its direct environment	Act in a conscious and critical way towards images
Draw up briefs of buildings of average complexity	Draw up briefs with social relevance
Develop strong concepts, capable to artistically integrate briefs with average complexity	Develop strong concepts, capable to artistically integrate complex briefs with social relevance
Transform these strong concepts into a meaningful architectonic design, at the same time developing a cultural surplus value	Transform these strong concepts into a meaningful architectonic design, at the same time developing a cultural surplus value
Develop some aspects of the liveability of space and put them into shape	Develop the liveability of space in all its aspects and put it into shape
Define a limited number of components of a meaningful architectural design in architectural and constructional detail	Define a meaningful architectural design in architectural and constructional detail on the level of a starting practitioner
Present architectural designs of moderate complexity to and negotiate with professionals as well as with laymen.	Present complex architectural designs to and negotiate with professionals as well as with laymen.
	Act ethically with reference to the urban context, the historical background, the socio-economic strength, the users, the sustainability of the building projects and their environments
	Plan the building of a project as a member of a team by means of governing processes and budgets on the level of a starting practitioner
Notion of and insight in the scientific and disciplinary fundamental knowledge proper to the domain of architecture	Carry out scientific research independently on the level of a starting researcher or employ scientific or artistic knowledge, attitudes and skills on the level of a starting practitioner in the domain of architecture
Develop an inquiring attitude, knowledge of research methods and techniques, skills, to initiate a problem-based inquiry	Develop on an advanced level an enquiring attitude, knowledge of research methods and techniques, skills, to initiate a problem-based enquiry and to cooperate in a multidisciplinary environment
	Strong notion of scientific disciplinary knowledge linked to a certain domain of architecture
General skills, such as thinking and reasoning skills, acquiring and processing information, critical reflection, creativity and an attitude to lifelong learning	General skills, such as thinking and reasoning skills, acquiring and processing information, critical reflection, creativity and an attitude to lifelong learning

Appendix: General competences for bachelors and masters in architecture.
First sketch.

BACHELOR	MASTER
Act conscious en critical towards images on the level of the building and its direct environment	act conscious en critical towards images
draw up briefs of buildings with average complexity	draw up briefs with social relevancy
develop strong concepts capable to artistically integrate briefs with average complexity	develop strong concepts capable to artistically integrate complex briefs which are socially relevant
turn these strong concepts into a meaningful architectonic design that develops cultural surplus value	turn these strong concepts into a meaningful architectonic design that develops cultural surplus value
develop and shaping some aspects of the liveability of space	develop and shaping the liveability of space in all its aspects
define a limited number of components of a meaningful architectural design up to the architectural and constructional detail	define a meaningful architectural design up to the architectural and constructional detail at the level of a starting practitioner
Present architectural designs of moderate complexity to, and negotiate with professionals as well as a laymen.	Present complex architectural designs to, and negotiate with professionals as well as a laymen.
	Handle ethically with reference to the urban context, the historical back-ground, the socio-economic strength, users, the sustainability of building projects and their environments
	Planning the building of a project as a member of a team, by means of governing processes and budgets at the level of a starting practitioner
notion of and insight in the scientific and disciplinary fundamental knowledge proper to the domain of architecture	carry out independently scientific research on the level of a starting researcher or employ scientific or artistic knowledge, attitudes and skills on the level of a starting practitioner in the domain of architecture
develop an inquiring attitude, knowledge of research methods and techniques, skills to initiate a problem based inquiry	develop up to an advanced level: an inquiring attitude, knowledge of research methods and techniques, skills to initiate a problem based inquiry and to cooperate in a multidisciplinary environment
	strong notion of the scientific disciplinary knowledge linked to a certain domain of architecture
General competences as thinking and reasoning skills, acquiring and processing information, critical reflection, creativity and an attitude to life long learning	General competences as thinking and reasoning skills, acquiring and processing information, critical reflection, creativity and an attitude to life long learning

Report of the Curriculum Group

Report to the Plenary session at the Meeting of Heads of European Schools of Architecture at Chania, September 2003

Loughlin KEALY, University College Dublin, Secretary working group on Curriculum

Introduction

For our report to the plenary session we present a perspective on the work of the Meeting, that has its origins in the Chania Meeting of 2002, and which has developed in three phases since then, with the support of the ENHSA network. These phases were:

1. The agenda phase, in which the tasks to be carried out were identified in Antwerp in March 2003;
2. The investigative phase, conducted through the questionnaires distributed through the ENHSA network;
3. The discussion phase, which has taken place during Chania 2003.

This report presents an outline of the discussion phase and some conclusions that the group have arrived at on the basis of the workshops. The Group also felt that certain conclusions should be drawn from the experience acquired to date, bearing in mind that the purpose of the Meeting and the discussion groups was to develop knowledge of a complex and rich tapestry of educational experience, in such a way that participants could be supported in shaping the direction of their Schools and in finding others who would support them also. The purpose of the work was to clarify rather than to simplify.

Of these conclusions, the central one is that we have unfinished business that requires a further phase if much of the value of the work done so far is not to be lost.

Observations on the Meeting

The contributions of participants in the workshops were a mixture of reflections on the information generated by the questionnaires, discussions on the points raised, accounts of related experiences and observations on the relationship between the issues affecting curricula to political and market pressures. The Curriculum Group decided against reporting the specific points made in the workshops back to the meeting as a whole. Participants are aware that the sessions were recorded, so it will be possible to reconstruct the detail of the various contributions. The principal themes that emerged were:

1. The question the Bachelor level, what it meant in terms of required knowledge and skills. The potential roles of graduates at this level.
2. The over-riding need to describe curricula in terms of competences, the knowledge and skill acquired at each stage.
3. The impact of the market on the approaches and priorities in education and training.

4. The question as to whether there were commonalities of knowledge and experience that had to be maintained and protected in the "common educational space".
5. The question of the role of practising architects in Schools, and the relationship between practitioners and academics.
6. The impact of research-driven agendas at Masters level, and the need to research the "culture of building".
7. The need to monitor developments in the Bachelors/Masters relationship as experience accumulated. It was felt that some way should be found to report developments to the Meeting of Heads at Chania 2004.
8. The relationship between the generalised architectural education and specific related domains, such as urban design and landscape design, should be investigated.

There are two principal conclusions. Based on these conclusions the Group puts forward to the Meeting, a number of actions. These actions are put forward in order to bring what has been done so far to a point where it can help in the understanding of a complex reality, and lead to productive action on the part of Schools.

Conclusions

1. Further analysis of the information generated by the questionnaires is required. In particular it is necessary to cross-relate certain key categories of information so that broad patterns can be identified and examined.
2. The Meeting of Heads of Schools is not yet in a position to engage in fruitful discussion about the place of research in the architectural curriculum. At present we are simply aware of the variety of situations regarding research, and the fact that varying research paradigms are being utilised.

Addressing the second conclusion will be helped by work that addressed the first.

Propositions

Accordingly we wish to state a position regarding the work of the Curriculum Group, and we look for the support of the Meeting in this regard. The position is that the work should continue and should address two actions and report on them to this Meeting in 2004.

1. The group should examine the questionnaire data to generate a series of matrices. These will relate various factors identified, size of school, staff structure, programme structure, specialisations offered, to name just a few. Presenting these relationships would help generate deeper discussion, based on common ground.
2. It is necessary to clarify ideas on research in architecture Schools. This we hope to achieve by initiating dialogue between existing networks of Schools that have research collaboration as a key objective. At present we have four examples of such networks, the Nordic Academy, USO-Build, ARCHITECTONICS (Spain) and the French grouping. There may be others. We propose that, as a result of dialogue, there will be a presentation at Chania 2004, and that the Meeting at Chania 2004 will provide an opportunity to document what is being done at this time, and to advance understanding through workshop discussion also.

And finally, the Group believes that if our common purpose in meeting here is to advance our understanding, and to help us to shape education to support architecture in a changing world, we must continue to build on work already done.

Discussion

Coordination by

James Horan, Dublin, Ireland

James Horan, Dublin, Ireland

I think we should spend some time on comments or questions on this morning's presentations. Perhaps while you're considering that, there is a point I would like to make, in general terms, stemming from the discussions we had yesterday and from Professor Habraken's speech. It's rather interesting that in the context of those discussions the words "knowledge", "information" and "database" cropped up frequently. Actually, an organisation such as the EAAE derives an enormous amount of its *raison d'être* and strength from the knowledge it possesses, which can be shared and distributed among its members. This morning we've been shown an example of how that knowledge can be collected and stored and I would urge those of you from schools that may not have completed the questionnaire to still do so as the information is still valid. Obviously, one has to update this from time to time, but it would still be very important and helpful if those of you who haven't filled out the questionnaire would actually do so and send it in so that it can be coordinated into the information already held.

Pierre von Meiss, Lausanne, Switzerland

We should be careful not to send a new questionnaire to the schools every six months as this can be a nuisance. We were upset to receive this questionnaire which was very similar to the one we had received from the UIA only six months earlier. You can appreciate that it's time consuming and frustrating to have to sit down and repeat almost the same information again. Also, since I actually helped the person involved answer the questions, I noticed that the responses to the same questions were not consistent. The only way to ensure a valid answer is to get some funds from somewhere, for example 500,000 euros from Brussels and send one person to each of the 57 schools to fill in the questionnaire together with the respective deans, teachers and administrators. This will reduce discrepancy and ambiguity in responses. For example it's very difficult to give exact answers to questions regarding number of part-time or full-time personnel. Therefore, I think that collecting this information is important, but we should get a research grant to do this more systematically.

Spyros Raftopoulos, Athens, Greece

I would like to add to Pierre Von Meiss' comment and point out that, in actual fact, there is a certain commonality in some of the figures presented for some of the reasons mentioned by Von Meiss. So, because I was the one who took on the responsibility of filling in the form, I had many questions that I think we will have the opportunity to clarify during this session. Perhaps we can combine some of the figures in order for us to get a better picture of what's happening in the various schools of architecture all over Europe.

The other thing I'm worried about is once the Bologna Agreement has been applied in certain countries and universities, since some schools have and others not, what are the results or first reactions? How do people, countries and the profession itself accept this problem? We heard earlier that the Greeks are resisting it, but I think that this is a rather strong term because we don't actually object to the organisation of the two cycles in the school curriculum. However, what we object to is the professional qualifications after the three years. Perhaps there are other schools in Greece that may want to express their attitudes or opinions regarding the matter. I also think it would help everyone to hear some feedback or results from those who have already implemented the Bologna scheme.

James Horan, Dublin, Ireland

I think that the question raised is an interesting one, particularly in the context of schools that are already operating within the Bologna recommendations. Is there anyone from such a school who would like to reply to that question?

Hansjoerg Hilti, Vaduz, Liechtenstein

It seems to me that we discussed this 2 years ago. We all agreed then that with a Bachelor's degree alone, one can't be an architect. We implemented this degree only last year, so we don't have much experience, but the idea is that after three years young architectural students can have a degree which allows them to get a job if they can't or aren't prepared at that point to complete the full cycle of architectural studies, which includes the Masters. Some students might even decide to change orientation, but, at least, if they have followed and have met the requirements for the full three years' coursework, they should certainly be compensated for their efforts.

James Horan, Dublin, Ireland

It's interesting to remember that at the Hania conference two years ago, it was agreed by this group that there was no obligation to absolutely conform to what was laid out by Bologna and, certainly, there is no doubt in my mind that the idea of a professional qualification is quite different from a degree after 3 years of study. The two are not equivalent at all. Consequently, the question asked by my colleague from Athens about what the professionals think is important. It's, in fact, a question I intend to talk about a little more tomorrow.

Dimitri Kotsakis, Thessaloniki, Greece

Yes, we have agreed on that point, but I would like to correct what I think is a mistake that has been made. There is no such thing as a Bologna agreement. It does not exist. There are many issues involved, one of which concerns what is going on with the Ministers of Education of the European Union. However, what we have here is not a European Union meeting! Last year, we had the opportunity of stressing that this is a meeting of Europeans, but not a European Union meeting. If we slip into thinking otherwise, it will no longer be considered a mistake, but something far more serious. Secondly, as we are not ministers nor their representatives, but members of universities, we are bound by the following agreement that was made in a Bologna meeting held, not in 1999, but in 1988 called the Magna Carta Universitatum, which dealt with the freedom and autonomy of universities,

as well as the unity of education and research in universities. Therefore, if we have an agreement here, it's the Magna Carta Universitatum accepted by all of us and not the EU Ministers' agreement in Bologna.

Dimitri Kotsakis, Thessaloniki, Greece

Yes, it was the Ministers and the spirit was the European Union, but it's important to differentiate that from the Magna Carta which was for European Universities. It's one thing for Ministers to convene and make decisions—that's their prerogative! Although we should assume responsibility for what we say about such decisions both to ourselves and our people. However, it's quite a different matter when it comes to a meeting of universities! Let's distinguish between the two and keep each in its own place.

Juhani Katainen, Tampere, Finland

Thank you for the explanation. This was very important. However, we should remind ourselves of what has happened since the meeting. The fact is, in many countries legislation has been passed. For example, in my own country, by the year 2005 we will have to start with this new system. I haven't yet seen the exact wording, but they are in the process of drawing up the statement. The point is that whatever meeting they have had so far and continue to have (the last were in Prague, and, just a few days ago, in Berlin), these have an effect on our world and it's good to have a comprehensive picture of the way things are. However, it's important for us to convene here in Hania, in an effort to find our way of proceeding properly in the future.

Kees Doevendans, Endhoven, the Netherlands

I have a copy of the Bologna declaration, which says that it was prepared by a conference of the Confederation of EU Rectors and Association of European Universities. So, it stems from the university itself.

Herman Neuckermans, Leuven, Belgium

I think the meeting can go back to the fundamental discussion we had last year or the one before that. Personally, I'm not interested. I would just like to answer your question and suggest that it's simply too early to know or talk about our experiences with the new system. We have heard opinions from those who recently started with it and those who haven't yet jumped on the bandwagon. But, we don't really have long-term experience as such, unless it exists, but hasn't been mentioned yet.

Constantin Spiridonidis, Thessaloniki, Greece

I would like to make a remark on principle. We must protect ourselves by maintaining a uniform approach, view and consideration of the actual conditions of reforms in Europe. We must safeguard our objectivity in evaluating the advantages and disadvantages of one accreditation scheme over another based on our positive and negative experiences, which should all be open to discussion. As an association, we must beware that our views represent ourselves and that we are not here to promote or support any particular scheme whether it's the Bologna one or any other for that matter. Also, I would like to give some

information that arrived today to remind us that nothing can be seen just from one point of view. The Union of Architects of Greece met a few days ago with their Spanish and Italian counterparts to try and exchange opinions on the critical subject of reforms and comment on the quality of diplomas derived from such reforms. In addition, there are other voices among us that, I think, we are obliged to hear in order for us to clarify our views and take a valid stand grounded in experience and knowledge. We need knowledge from various directions for our debates to bear fruit and we must remain open to all views, comments and criticisms regarding new policies.

Richard Foqué, Antwerp, Belgium

Herman mentioned earlier that we had this discussion two years ago, yet every year since then it's come up again. Personally, I'm fully aware of the dangers of particular political structures, but I'd like to warn that, whatever system you have, the system itself is useless, unless it's filled with human resources and concepts. I would prefer if during this meeting we discussed elements of quality and content rather than going back to structure because, ultimately, it's these factors that will determine the type of faculty you have, irrespective of structure. A mediocre faculty is bound to produce mediocre education. I propose that we go a step further and discuss the themes we defined for this meeting, including elements of content and quality, etc.

James Horan, Dublin, Ireland

There is no doubt that in this room we have people who are being affected in very different ways by the decisions taken by their ministers in their individual countries. In some cases, the decisions have been made and the structure of their architectural education program has been decided upon. In other cases, this matter is under discussion and no conclusions have been reached. Then there are, in this room, those who are not in any way influenced by this because they come from outside the EU. One thing we have in common, though, is that we're all involved in architectural education. I think Richard Foqué's comment was probably the most valid. The quality of architectural education that, we, as educational providers ultimately deliver doesn't have to be affected hugely by the presence or absence of some ministerial structure. It's a much deeper issue and one that we still maintain control of, irrespective of which location we find ourselves in. I'd like to reiterate Richard's point that this is really an opportunity here to look at what we're doing as educators and what our role will continue to be in the future.

Per Olav Fjeld, Oslo, Norway

I must say that I enjoyed this morning because it provided us with information that I don't think any of us really knew in the context that we've been talking about. So, although I don't always appreciate this type of information, this time I really did. Also, I don't see how or why this information should be attacked in any way and, for it to be raised as a political issue, is wrong. I don't find it has any basis for further discussion.

James Horan, Dublin, Ireland

Maybe, on that note, we should break for lunch, but before we do that there is a voice from the USA, Malecha Marvin, who wants to say something.

Marvin Malecha, North Carolina, USA

I'm an outside observer, but would like to share a perspective with you. In 1991, the Association of Collegiate Schools of Architecture, the American Schools of Architecture, the American Institute of Architecture Students, The National Architectural Accrediting Board and the National Council of Architectural Administration Boards all met in Paris. At that meeting, they decided that there should be a single architectural degree in the US, called the Master of Architecture. Within days, that agreement began to break down and we have spent twelve years arguing about it. The net result of that is there are, now, more degrees than there were before; there are more qualified paths leading to licensing and there is yet another degree emerging which is a whole new variation, challenging the entire system again. So, when I saw the various options being put on the board, I thought to myself that I should send you the twelve years' worth of arguments because of those of us who thought that there must have been something really intriguing going on in Paris for the Americans to have voted for such a scheme to begin with. It is finally being defeated after 12 years. So, the ACSA, along with the American School of Architects, reaffirmed the importance of the diversity of degrees in the country. So, I thought you should have those twelve years in perspective. Also, I'd like to mention that the second thing we do have in the US, permitting a great deal of activity to happen, is the ability to move across state boundaries with great ease because of the common-union count system, which has helped us with student mobility. In the United States, when it comes to education, we don't have a federal system, but operate as fifty separate countries, with each state controlling its own licensing, accreditation of its own degrees and funding of its own programs. Another thing that is common tradition in the US that I can see happening here if there is a common commitment can be seen through the following example. A week ago, a student was in my office saying he was interested in studying about sustainable communities for the Master's program and was asking about where he could go. This is a very good student who has been in our school for four years. We started talking about the Universities of Michigan, Washington and the tradition of work at M.I.T. concerning developing nations. In other words, we take it upon ourselves to encourage students to move on into the network of schools. So, if there is anything I heard this morning that I thought was incredibly valuable was to understand the network of skills and abilities you have among yourselves and not to only think about this unit or credit counts as "islands" on to yourselves, simply because your students will begin to move, regardless of how you feel. In my school, 18% of the students at the undergraduate level come from some other state. That means that they make the personal choice to pay \$15,000 yearly tuition to come to our school when they could stay home and study almost free. At the graduate level, 75% of the students are non-resident (out of state), choosing us because of the specialty of the Faculty in terms of what / where we publish, how we build and are recognised. So, we are perceived as an element of the network in the same way that we perceive others within the network. I would, therefore, urge you to get on with that part of the discussion to talk about how you can move on amongst yourselves with great freedom and not worry so much about what the degree is called.

James Horan, Dublin, Ireland

Thank you, Marvin. With that we'll close this morning's session.

