

The Assessment of the Role of Practice in Architectural Education: A European Comparison

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INTRODUCTION

The role, standing and function of the architectural professions are in turmoil.¹ This is similarly reflected in the discussions within architectural schools² and the issues currently being debated nationally and internationally.³ The debate centres on the following questions:

- Is the primary responsibility of the school to provide an education in the culture of architecture or train proficient architects?
- Who "owns" the knowledge base, academia, the state or the profession?
- What length of schooling is required to become a proficient architect and how could this be delivered?
- What resources are required and who should pay to ensure the quality of a nation's architects and architecture?

These are but a few of the issues that currently face architects, their professional bodies, academia, and above all the society architects serve. The aim of this paper is to identify means for assessment of quality in architectural education and explore the very central relationship between practice and education. The paper draws on the research findings of a comparative study of architectural education in six European countries undertaken for the Dutch Ministry of Housing, Physical Planning and the Environment.⁴ The intention is not so much to report back on the findings, but to explore the approach taken and identify the outcoming measures for comparison.

A COMPARATIVE STUDY

The research undertaken by the Institute of Advanced Architectural Studies at the University of York for the Dutch Ministry of Housing Physical Planning and the Environment (VROM) was commissioned to determine whether Dutch Higher Professional Training courses in architecture and town planning brought graduates to a similar level of proficiency to those in other European countries. The objectives set out in the brief were to provide an independent comparison of the:

- proficiency required at the outset and retained at the end

of the course;

- balance between the theoretical and practical elements of courses;
- depth and breadth of curricula;
- time allocated to practical experience during or after study.

Comparisons were to be made of architectural education in Belgium, France, Germany, England & Wales and Spain. The research selected five schools from each of these countries according to their size, method of funding and similarities to the Dutch schools.

The methodology devised reflected the realization that educational content may strongly reflect the organisation of construction in each country and the needs and expectations of society. The study set out by identifying the role of the professional institutions and the relationship between the profession and the training and education of professionals by determining:

- funding for education;
- validation of courses and quality control;
- curriculum development;
- research and research funding;
- continuing professional development;
- the professions expectations from education.

The research did not aim to rank schools in terms of proficiency or quality. The comparison reviewed twenty nine schools of architecture in six European countries. Schools were classified according to whether they were academic (Universities) or vocational (Academies) and whether they had a technical or arts orientation (Figure 1). Each of the schools were visited by the research team to collect data on course admissions, curricula, staff numbers, contact time, and alumni information. In addition samples of school prospectuses and annual reviews were collected. The information collected from schools in each country reflected the different methods of organising construction, and the local needs and expectations of society. It would be naive to think that architectural quality and curriculum content could or should be directly comparable across national boundaries.

	academic/research						vocational	
technical/specialist	NL	UK	G	F	S	B		G B
	TU Berlin TU Eindhoven TU Delft Louvain Leuven Bath ENSAIS Stuttgart					Madrid Barcelona	Fachhochschule Diisseldorf	
arts/generalist	Newcastle Cardiff					Sevilla Pamplona	Henry van de Velde	
						AA FRENCH ECOLES	Amsterdam Academy Munich Academy RCA	
	UK	F	S				NL UK G B	

Fig. 1. Focus of architectural schools in six European countries

To provide a more qualitative assessment of professional expectations and architectural education, a one day workshop was held in each country where representatives from the schools presented the aims and objectives of their courses, their approach to self assessment and examples of final year (diploma) student projects. A comparison across all six countries was undertaken by a two day peer review panel chaired by Professor Joen Sachs from Chalmers University of Technology Gothenberg (Figure 2). The objectives of the panel were to establish:

- a consensus view of the functions of planning and architecture across Europe;
- the attributes expected of an architect.

The final results were drawn up by the research team supported by a monitoring committee and advisory group, from the quantifiable data collected from the twenty nine schools, and assessed the findings against the measures proposed by the peer review panel. Recommendations were then presented to the Dutch government.

As students achieve greater mobility across boundaries (e.g. Erasmus scholarships) the need to be able to compare curricula, and move freely without losing credits will place greater pressures on common measures between schools. This study found the greatest difficulty to find trustworthy comparable data between schools, or even common definitions. The outcome has been a set of robust measures that could if agreed be the foundation for a database to provide a common comparison across European countries for both students, the professions and government policy makers.

EDUCATIONAL ASSESSMENT

This exercise was the first of its kind for the research team and we believe it is the first study of its kind in Europe. The

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Professor Joen Sachs
Chalmers University of Technology, Gothenberg, Sweden
- Architectural Panel
Professor Tjeerd Dijkstra
Architect, Lecturer, The Netherlands
- Sir Andrew Derbyshire
Architect, President RMJM and Associate of the Institute of Advanced Architectural Studies
- David Mackay
Architect, MBM Architects, Barcelona, Spain
- Alberto Scarpa
Architect/Engineer, European Real Estate Director, Digital Equipment Corporation, Switzerland
- Town Planning Panel
Joost Schrijnen
Architect-Planner, head of City Planning, Traffic and Transport Department, Municipality of Rotterdam
- Professor John Delafons
Planner, Lecturer, University of Reading
- Ulrich Becker
Urban Planner, Urban Plan, Berlin
- Odile Decq
Architect Planner in practice, Paris

Fig. 2. Peer review panel

immediate question was about quality and how it could be assessed in a comparative manner.

Academic Expectations

The methodology allowed for a comprehensive comparison of data, taking into account the professional and industrial cultural differences. There was, however, something lacking, a deeper understanding of the spirit of the schools and how they evaluated themselves. The one day in-country workshops proved to be rewarding sessions and contributed significantly to the findings.

The workshops questioned schools on their relation to practice and on the control and assessment of quality in education. The schools identified the following means for quality self assessment:

- student evaluation through discussions or questionnaires.
- student evaluation by free choice of course and tutor
- the quality of external professionals who come as tutors and critics.
- student success in competitions
- The type of jobs alumni are in, competition successes, and formal graduate feedback

Significant, both for the findings of this study and also for the wider understanding of architectural education, these measures are not those typically used by educational assessment boards.

One of the most effective assessment of a schools success it was agreed is graduate progression, with records of positions held, breadth of job placements, progression to higher degrees and competition successes. Few schools, however, had good alumni records, and longitudinal assessments were minimal.

Practice Perspectives

The peer review process was the second focal point of the research and marked the end of gathering and formulating data and the start of the analysis and assessment process. The peer review group was central to the study not so much in assessing the various schools, but in providing a valuable framework for comparative assessment.

Considerable differences were identified in the ways in which the professions are organised across Europe. These differences reflect, the degree of professional specialisation; the types and number of methods of construction procurement, and the method of patronage. (Figure 3).

The traditional architectural role as the integrator of requirements of form and technologies has become much more arduous as the breadth of required competency and scale of responsibilities has expanded. Often the role is too broad and demanding for one profession to fill. In terms of educational requirements, it becomes therefore increasingly important to train and equip architects to work collaboratively and effectively with many other professionals in the building process. The research reflecting on the deliberations of the peer review panel identified six key areas of competence that might universally be reflected in architects. These covered the ability to:

- identify problems and establish an architectural strategy;
- find resolutions to competing demands;
- be sensitive to clients wants and needs;

Sophistication and Number of Functions	HIGH		UK	
	MEDIUM	Netherlands Germany France Belgium		
	LOW	Spain		
		LOW	MEDIUM	HIGH
		Number of Procurement Routes		

Fig. 3. The context of construction in Europe

- understand the appropriate balance between client needs and public interests;
- collaborate and communicate with other specialists and lay people;
- synthesize and establish solutions.

The Peer Review group identified the following expectations of an educational systems to produce high quality architects.

- **Time to reflect**

Acquiring practical and useful architectural knowledge and training in the expertise of design both require enough time to allow for observation and reflection. Students should have the opportunity to reflect upon what they are doing in their design work.

- **Practice and criticism**

Basic architectural competence and skill they felt should be learned and understood through practice in design situations. Every design situation opens up the mind of the student and offers rich possibilities for learning by reading, visiting and sketching; by trying, comparing and modelling; by reflection in action and by reflection in and on action. Mutual criticism during study, the peer group concluded was an essential part of the learning process.

- **Urban design in the curriculum**

The peer review team identified a new and important role for architects in the field of urban design - a discipline that comes between architecture and town planning and is closer to project design than the broad range of planning skills. Urban design they argued should be well established in the architecture curriculum.

- **Practical experience both in the office and on site**

Introducing a period of real practice in an architect's office and another period on a building site within the total educational period they argued provides the student with a better perspective in which to place the different pieces of knowledge presented and to better understanding the structure and the content of the curriculum.

Exposure to 'real' problems

The practitioners advocated the strength and advantage in bringing real life and local problems into the curriculum. It gives students opportunities to test the architect's mission and introduces routes of communication with lay people. It can reveal conflict of ideology and approach between schools and society at large, and it can also be the start of cooperation between students and a future client. Nevertheless, local problems must be discussed in a larger, perhaps even in an international, context. This requires visiting professors and sabbatical programmes, study tours, open seminars and rich and varied contacts.

The deeper understanding of architectural practice

The prerequisite for an architectural student wishing to work in different countries is a basic understanding of how much of architectural practice, standards, rules and regulations are specific to each country. Understanding one's own country codes by "going behind them" is difficult but a rewarding experience of great value for

future work.

- *Provide a basis for specialisation and continuous learning*
Basic architectural education must provide some sort of strongly articulated "core curriculum" (identity), several options for further more specialised study not too rigidly connected with the core (flexibility), and an easy transition to accessible forms of continuing professional education (evolution).

The Peer Group also highlighted the fact that only a comparatively small proportion of architectural students have the opportunity to practise as independent design architects. It is important that architectural education also prepares - mentally as well practically - students for other duties within the building and construction sector. In view of these expectations, the peer group identified five key points that could be applied to indicate the strengths and weaknesses of schools against what they considered essential for architectural education.

1. *Relation between studio work (project, field work) and taught courses (facts, theory) in the total study*
Project work plays an important part in architectural education, but the use of the terms "project" or "studio" in a curriculum may imply different methods of training. The Peer Group believed that good studio training means a not-too-large, well-staffed group of students working together and trying to solve a common problem. Such work should include theoretical and factual components, discussions and critique. The student:staff ratio is a key statistic in this respect.
2. *Relation between school and the profession*
A working relationship between the profession and architectural schools supporting exchange of ideas between them is mutually beneficial to both. This contact should, also be maintained in other ways, like practising architects teaching on courses, as is usual in some countries. The ratio between full-time and part-time practising staff becomes a key statistic.
3. *Relation between the school and the local community*
There are advantages in cooperation with the local community and having students work with real building and construction problems in their local area. Projects of this kind often attract the interest of the public and serve to "market" individual students as well as the school itself. They also give students a flavour of possible future roles in society and a better understanding of different possibilities in their professional lives. The percentage of projects per year drawing on the local community is a key indicator.
4. *Relationship between basic, mainly compulsory, courses and optional line of study*
The Peer Group advocated an architectural education structured in two separate parts: a basic part of about two to three years, giving a general architectural design competence and composed mainly of a compulsory curriculum, followed by two years with a variety of choices, where the student could concentrate on specific problem

areas. Among other advantages, such a division allows more student choice and mobility.

5. *Relations between schools and professional practice*
A substantial period of practice (ideally at least six months) in an architect's office (and/or construction site) during the course of architectural education is recommended for all students to give them an understanding of the context and constraints within which architectural work is performed and in which drawings, descriptions and so on are to be understood.

Evaluating the Curriculum

The peer review panel assessment criteria were linked with the more commonly discussed criteria in the schools leading to four areas for assessment and evaluation. These areas are strongly linked to one another and must be viewed as whole in evaluating curricula. We see the four points and the measures which relate to them as a checklist for a balanced and integrated educational cumcula.

- Breadth and depth of a course is reflected in the relationship of core and optional content. (Figure 4). The direction of the school may be a determining factor as to whether content is covered in breadth or depth (i.e. wider arts based curricula or in-depth technical study). Measures for evaluation are:
 - range of subjects covered and the amount of contact hours allocated to each.
 - range of teaching modes (project based, case study, personal research, lectures, team teaching etc.).
 - amount of time allocated to options, and the range of subjects and opportunities (e.g. placements study abroad etc.).

Balance between theory and practices.

Measured by:

- course time allocated between theory and studio based learning.
- the mix of disciplines as reflected in background of staff, use of staff from other departments,
- staff student ratios in the studio and balance of full and part time staff practising and/or undertaking research.
- Specialization, as reflected in the opportunity for students to pursue a subject in depth, which could become a defined professional discipline in later life (e.g. Urban Design Project Management, Conservation).
- Integration across disciplines, with external professions and the local community and between years and departments. Measures include:
 - percentage of practising staff (full and part time);
 - practitioners involved with the course (e.g. Tutors or advisers);
 - proportion of time allowed in the curricula for vertical integration between years and across departments;
 - number of projects and amount of curriculum time allocated to group work;
 - time allocated to practice placements.

	A			B			C		D		E				TOTAL
	History and theory	Social sciences	Basic sciences	Building science	Building services	Professional practice	Urban planning	Surveying	Presentation	Architectural design	Conservation	Interior design	Optional courses	Research	
Delft University of Technology	246	28	70	527	175	150	450		254	1180			280		3380
Eindhoven University of Technology	180	40	200	680		60	60		200	1420			480		3340
Henry van de Velde Institute	420	180	210	690	150	165	225	30	420	1600	30			60	4180
La Cambre Bruxelles	360	180	315	630	105	120	330	30		1500			360		3990
Sint-Lucas Institute Gent	522			864		180			513	1449			36	126	3690
PHAI Hasselt	300	285	315	570	120	150	150	30	780	1080	30	60	240	120	4230
Katholieke Universiteit Leuven	250	75		770	30	139	45	15	120	1030	20		562	390	3446
University of Bath	300		75	300	90	60	25	210	300	2100	300	300			4060
Ecole de Architecture de Grenoble	332	202	125	350	172	222	200		557	1488	84				3692
Straasbourg, ENSAIS	528	240	128	480	256	128	224		288	1296		160	112		3840
Technische Universität Berlin	224	112		490	154	294	224		336	1050			448		3332
Fachhochschule Düsseldorf	28	112		224		602	280	70	588	602			200	28	2734
Weimar (architecture)	265	58		748	56	284	172	39	550	n/a	84	142	196		
ETSAB Barcelona	231		294	647	273	42	504		882	1344			1029		5246
ETSAM Madrid - 2 year construction option	224		896	1232	224	196	224		1204	1260					5460
ETSA Seville - 1 year construction option	336		812	1288	168	112	448		980	1092					5236

Courses in contact hours including final project, but excluding practical work

A Basic Background Sub —

1. History and theory (including art, architecture, urban and engineering history and theory).
2. Supporting and social sciences (psychology, sociology, anthropology, languages etc)
3. Basic sciences (mathematics, geometry, physics, chemistry, computer science)

B Building Construction and Process

4. Building Physics, Construction and Science (including materials and their qualities)
5. Building services (environmental design, heating, cooling, electric, acoustics etc.)
6. Construction economics, management and law (professional practice including ethics, costing etc)

C Understanding of the surroundings

7. Study of the urban and surrounding environment (including planning housing, landscapes, environment and ecology)

8. Topography, surveying and recording (skills)

D Project Preparation and Design

9. Presentation techniques (drawing, modelling, Computer Aided Design)
10. Architectural Design (studio work including urban design, planning and structure projects).

E Complementary Studies

11. Conservation and historic buildings
12. Interior design
13. Research and written dissertation.
14. Optional courses (a wide range of subjects that may involve in depth study of any subject area within the curriculum, subjects from other departments or practice experience)

Fig. 4. Curriculum content for a selection of European schools

Practice plays a very important role in education and the study identified several very distinctive models.

The length of study varies considerably in each country depending on the amount of time allocated to practical experience both within the course and directly after the course before professional qualification. In addition the formal length of the course can vary dramatically from the amount of time actually taken by students who work and study, so expanding the length. Figure 5 compares the different time required for a selected number of schools across Europe.

Curriculum and course content is the core of comparison, but currently it is difficult to find a common means of measure due to; the definition of contact time for studios and

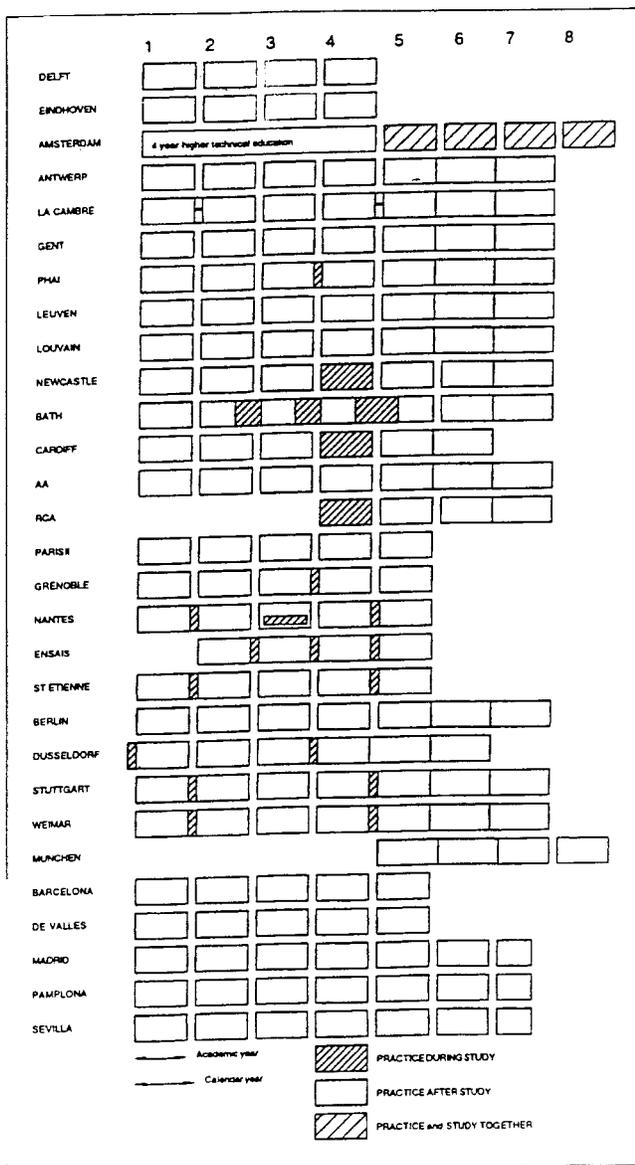


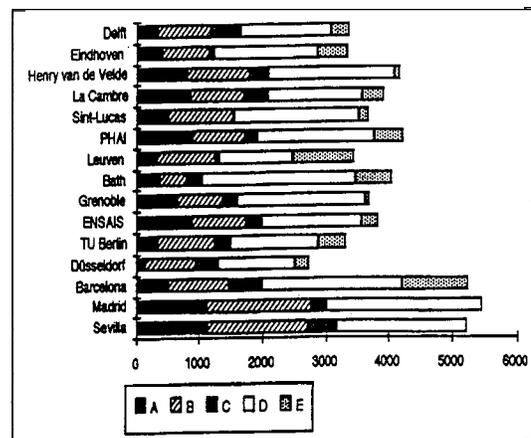
Fig. 5. Study models for the full professional courses and time required to professional registration for each of the schools, including practice periods during and after formal study

lectures, modular versus traditional courses, the variety of intakes and time taken for professional experience, the use of problem based team teaching, and the wide diversity of subjects. For purposes of comparison, general areas of study were identified (Figure 4) and the amount and percentage of time spent on specific subject areas analyzed (Figure 6).

CONCLUSIONS AND FUTURE DIRECTIONS FOR ARCHITECTURALEUCATION

The construction industry and the role of the professions in both Europe and North America are in a state of flux. The upheavals and points of friction are well documented by Sir Michael Latham⁵ in his report to the UK government on improving construction in performance and by Professor Robert Gutman on architectural practice in North America.⁶ Education has a potentially critical role in firstly broadening the horizons of students to become both sensitive clients and enlarge their parameters of practice. Secondly the universities can foster better understanding between disciplines and

Contact Hours by Subject



Percentage allocation of courses to subject areas

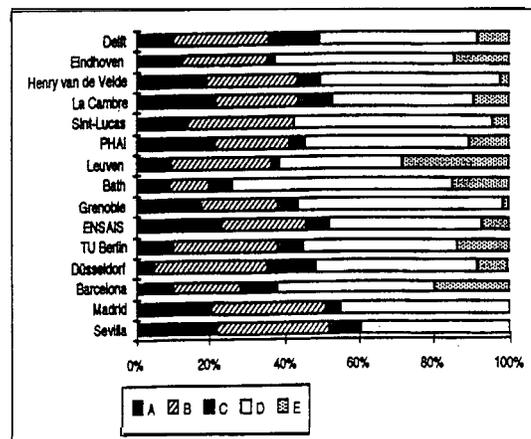


Fig. 6. Comparative allocation of subjects for selected European architectural courses

opportunities for teamwork. Finally Academia can support the profession in developing and strengthening its knowledge base through research, and a programme of continuous learning. In Europe conspicuously apart from the UK a high proportion of the students who enter architecture do not go on to practice (Figure 7). Students in addition to entering the architectural profession may go on to other sectors of the construction and property industry or become intelligent clients. The role of the profession in controlling the content and quality of architectural education varies considerably across Europe. In Europe of the six countries studied the UK was the only one where the professional body acts as a validating body by setting curricula guidelines, accrediting courses and assessing quality through visiting boards. In Continental Europe the state (e.g. France) or schools (e.g. Germany) have far greater control, advised and supported by the professions. In Spain even though they have a powerful architectural profession controlled through the "collegio," the profession has little formal input into education. It influences standards through a tradition of the best practitioners teaching, and supporting student exhibitions and competitions. With the growing diversity of the roles of architects and merging of traditional professional demarcation lines, we may expect to see academia setting its own agenda, and working with practice, providing support through research and a programme of continuous education.

Time to Reflect

A comprehensive understanding of architecture requires time to mature. Throughout our study of architecture in the six European countries much of the discussion, especially from government administrators, centred on the length of course. Some argued that the educational curriculum should be concentrated into as short a period as possible (four years) so reducing the financial burden to the State, and ensuring students were through the system and full time members of the job market as rapidly as possible. Other (mainly the professions) argued for an extended period of education. Our own conclusions, supported by the Peer review panel was that the amount of formal student input through contact hours, could be separated from the overall time allowed with gaps for reflection. In Germany though the course officially can

be undertaken in four and a half years, on average it takes eight, allowing a balance of learning and practice, and resulting in greater maturity. From our review across Europe we would argue for an intense full time two (The Netherlands) or three year (UK first degree) first stage to a professional qualification which provides a core grounding and sufficient knowledge for a student to select a specialist direction to complete their higher education. (Figure 8). The second phase providing greater specialization and might be completed in association with working in practice. This integration of learning and practice may be delivered as in the UK by a year out in practice and then two years in school, followed by a further year of experience, or as in Germany or Spain by a more continuous and informal mixing of study and practice, often working as an assistant to the professor. Increasingly another alternative which draws together practice and academia is the day release approach (eg Amsterdam Academy) where the student is a full time member of a practice, and undertakes studies in addition to work. In the second phase of specialization, close links between academia and practice arguably provide innovation to practice, improve the quality of architecture and enhance the knowledge base.'

Integration

Architectural design has the unique role of synthesizing a disparate set of requirements and sources of knowledge into a meaningful and elegant form fit for the purpose prescribed. Architectural teaching through the role of the studio has provided the venue where this synthesis can occur. Our review of schools provided a wide range of examples of integration being achieved between taught and project work, with other disciplines, vertically between year groups of students and between the school, practice and clients and users in the community. The Netherlands with its problem based team teaching (Delft) has achieved strong integration both across professions and between disciplines. In France we were particularly impressed with the school at St Etienne where the course was designed to reflect current issues in the local community. In the UK the unit system (eg AA) allows for both vertical and subject integration, and the time for a tutor to explore issues in depth.

	No of Schools	Architects per Million Inhabitants	Students per Million Inhabitants	Ratio architects to student
oNetherlands	5	41.3	205	1.8
oBelgium	12	853	243	3.8
oEngland & Wales	34	543	133	4.1
oFrance	24	452	243	1.9
oGermany	53	1170	660	1.8
oSpain	10	453	419	1.1

Fig. 7. Comparison for six European countries of number of students attending architectural schools to number of qualified architects

		Architecture
		Town Planning
		Building Technology
		Housing
		Real Estate & Management
Year 1	Year 2	Year 3
		Year 4

Fig. 8. The Delft four year degree course provides a common first two years with subsequent specialization

The seamless integration of practice, studio design and specialist input in the second phase of professional education, which may be spread over a number of years is one of the most interesting potential developments for academia as we look ahead.

Educational Options

Our review of architectural education in Europe shows a wide range of architectural courses, covering a wide range of approaches and a divergence of expectations. Whilst schools varied in their content and expectations from country to country reflecting local demands, they were equally divergent depending on whether they were arts or technically orientated, or academic or vocational in their origins. We found stronger similarities in curriculum and approach between Technical Universities (eg Delft and Berlin) and Academies (Munich and Antwerp) than we did within countries. With increasing mobility of students between schools,

or sharper understanding of similarities and differences, of educational approaches could be a invaluable service for both staff, students and policy makers.

The study undertaken for the Dutch government provided an important cross-European analysis of architecture and planning education, with the comparative data to learning from the best examples from each school. The Dutch government has provided the initiative for providing a framework for comparison. It is hoped that the European Union will establish an easily accessible educational information exchange to expand the process.

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 - ¹⁰ Parry, E. (1995) Design Thinking: The study as a laboratory for architectural design research. *Architectural Research Quarterly* Number 2 Vol 1, London.
- Eric Parry through examples of studio teaching at the Architectural Association in the late 1970's argues that the tutors and their studio work provided an exemplar for innovation in practice, and many of those involved with the AA went on subsequently to become leading practitioners.