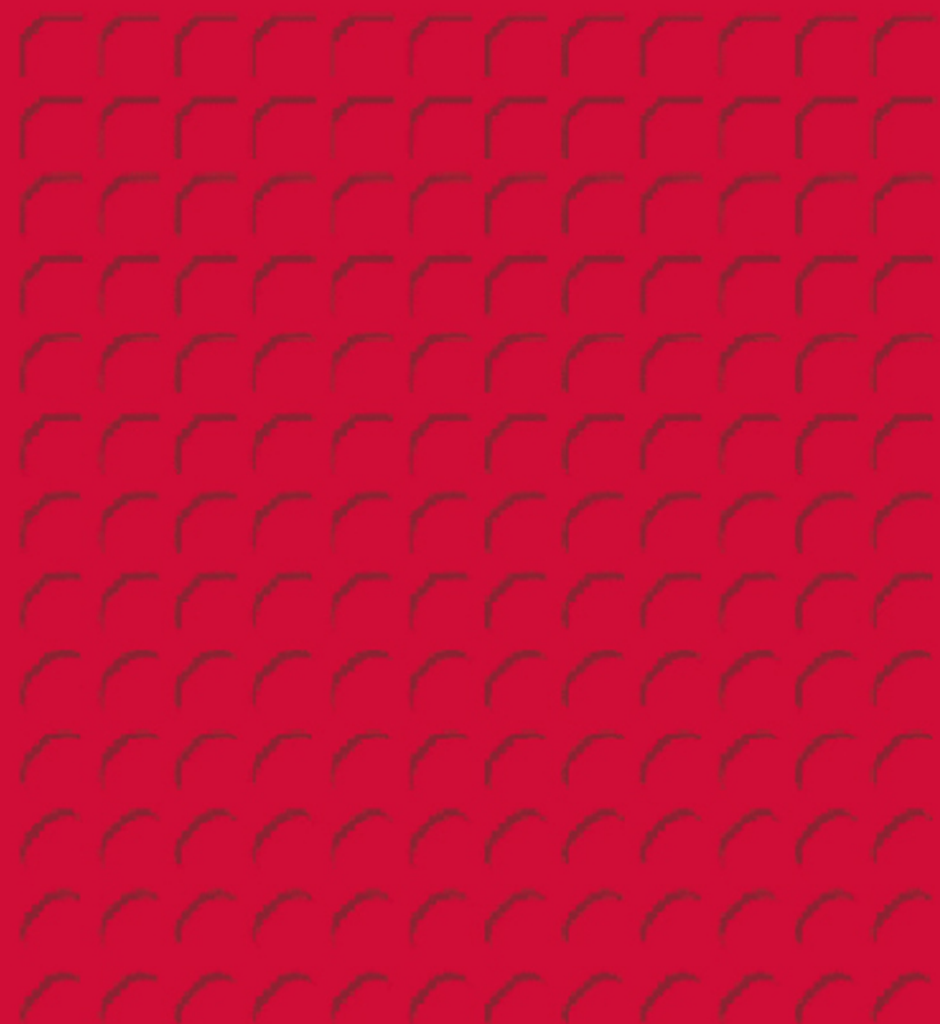


# Changing Architectural Education

Towards a New Professionalism

David Nicol and Simon Pilling



**Also available as a printed book  
see title verso for ISBN details**

# Changing Architectural Education

Higher education in the built environment is under pressure to change in order to cope with increasing student numbers in the face of diminishing resources, to meet the demands of an evolving construction industry and to prepare students more explicitly for their working lives and changes in society—in short, to foster a new professionalism.

This book examines and discusses contemporary architectural education through a series of case studies that illustrate how educators have responded to the need for change. In particular, there is a focus on the potential of design studio teaching to enhance attitudes and skills in communication and teamworking and to prepare students for lifelong learning.

*Changing Architectural Education* is written by teachers of architecture for teachers, and it

- gives an up-to-date account of research on learning and its implications for architecture,
- provides a source of practical ideas to enhance design-studio teaching,
- suggests strategies for improving assessment practices,
- illustrates ways of supporting change across a whole school of architecture.

This book brings together contributions from those working in the fields of architectural education, architectural practice and educational research both in the UK and the USA. The writers are at the leading edge of educational development and they describe how they, and their schools of architecture, have been responding to the professional challenges.

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# **Changing Architectural Education**

Towards a new professionalism

**Edited by David Nicol and  
Simon Pilling**



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# Preface

In April 1999 an international conference—Changing Architectural Education: Society's Call for a New Professionalism—was hosted at De Montfort University, Leicester, UK. Attended by over 70 full- and part-time educationalists/practitioners and students from the UK, mainland Europe and the USA, its aim was to share experiences in innovative studio teaching methods. The underlying theme of the two days was the changing context of practice and the need to reflect this in the expectations of architectural education and its approach to teaching and learning. Two further goals underpinned the conference: to create a forum for the often 'unheard voices' of architectural education—part-time tutors drawn from architectural practice, and student graduates; and to focus on the processes of architectural education—looking at how students learn, rather than just what they learn.

Over the course of two days the conference participants heard 42 presentations from part-time teachers, full-time academics, heads of schools, students and representatives of the professional institute—the Royal Institute of British Architects. The main focus of the presentations was innovation in teaching and learning in architectural education—the scope was wide ranging. Some contributors described innovations in design studio teaching that centred on community, interdisciplinary and client-based projects. Others described how the review process, or crit, had been developed to make it more participative and a better vehicle for learning. Others described how teaching had been restructured across whole schools of architecture in support of better learning, or how to prepare tutors to teach in the design studio. In all the presentations there was attention to ways of improving students' acquisition of skills—in design, teamworking and communication—and to the development of independence in learning. The participants showed a determination to bring a new professionalism to the delivery of architectural education—to effect change based on a radical rethink of the context for which students are being educated and the skills they will require.

The origins of this book lie in that conference, an event made possible by a grant received from the Higher Education Funding Council for England (HEFCE) for a three-year teaching development programme: Clients and Users in Design Education (CUDE). Since reference is extensively made throughout the book to this acronym, it would seem appropriate briefly to explain the initiative here.

In 1996 the HEFCE created a Fund for the Development of Teaching and Learning (FDTL), for which bids were invited from university departments across all subjects to catalogue and disseminate good teaching practice. The CUDE project was one such funded programme. Its goal was to bring a greater understanding of clients, users and cross-disciplinary working into design education, using the design studio as its primary vehicle. Undertaken at the former Institute of Advanced Architectural Studies at the University of York, in association with the Universities of Sheffield and De Montfort at Leicester, the programme was aimed at enhancing students' skills in listening,

communication and teamwork, in the context of a collaborative rather than a confrontational approach to learning. These themes are developed throughout the book.

This is a snapshot of architectural education at the end of a decade that has seen dramatic changes in professional practice. It is hoped that this book will act as a prompt for reflection and stimulate a broader debate.

DAVID NICOL AND SIMON PILLING



# Foreword

*Robin Nicholson CBE*

The Clients and Users in Design Education (CUDE) process gives me real hope that tomorrow's architects will have a greater chance to be more effective as conceivers and coordinators of the built environment.

CUDE has brought together a number of educators who are questioning our traditional practices in education and are 'trying to do it completely differently' as Sir John Egan (1998) would put it. A programme of sharing ideas in particular fields has begun.

We should not, however, underestimate the enormity of achieving the necessary cultural change in the ever more competitive higher education industry, which, like the design professions themselves, is struggling to deal with nineteenth-century professional models. It is even more difficult when the promoters of the status quo can point to the very real success of the British architectural elite in the world marketplace. If we can be so successful, should we not just do what we do a great deal better?

There is no doubt, that we already operate in a global economy, although a great deal of the work we do is and will continue to be at a very small scale—for example, 80 per cent of European construction enterprises employ fewer than 10 people. But the rules of the game have changed, again. After a devastating 20-year assault by the crusaders of the free market and the collapse of institutionalised socialism, we can begin to see the way towards understanding the needs and opportunities of the knowledge-based society that so many commentators have been trying to clarify for us for so long.

Few truly 'heard' the messages contained in the *Strategic Study of the Profession*, published by the Royal Institute of British Architects (RIBA, 1992, 1993, 1995), where for the first time the institute asked our clients what they really thought of the service we gave them. In his Introduction to Phase 2 of the study (*Clients and Architects*, October 1993) the then RIBA president, Frank Duffy, spoke of the 'need to be prepared to devote as much design imagination to managing their [architects'] relations with clients as they devote to crafting their clients' buildings', a subject that in his words is the 'one single, critically important relationship that rivets the attention day by day, week by week, of all practising architects.'

Surely we now have to overthrow the received myth that, as architects, we lead the design process by right and that we can do it on our own. Rather there is lurking in the interstices of our culture a radical belief in cooperation, that the whole (team) is greater than the sum of its parts, or as Charles Leadbetter (1999) puts it, 'An ethic of collaboration is central to knowledge-creating societies. In order to create we must collaborate.'

One of the most heartening aspects of this publication is the, albeit small, number of green shoots of courses with overlapping professional subject areas such as architecture

with planning. This is just a beginning in the refocusing of the industry's formations.

To collaborate requires mutual respect—one of the radical concepts in Egan's programme for change that pleasantly surprised me as being so central to this forthright industrialist's ideas. Immediately, this highlights a major issue in our education—a process that traditionally leads us to demand respect for the architect with little or no mutuality. If that was ever sustainable, it certainly ceased to be so during the 1970s, when the pattern of authority right around the world was changed irrevocably and since which we, and it could be argued the professions in their traditional form, have been progressively marginalised.

The central role of design in our education is of course vital to the nurture of our unique 'core' skills and our central contribution to society. But, I would contend, educating all students of architecture towards achieving the goal of 'signature architect'—in my day Frank Lloyd Wright, and perhaps today Zaha Hadid—does not help the 95 per cent who will not begin to achieve that level of invention coupled with a necessarily ruthless approach to implementation.

The UK weekly newspaper for architects—*Building Design*—recently published a review of the 'top 100 architectural students'. It revealed the continuing strength of this myth, through the stated desire of 98 per cent of them to have their own office within 10 years. It is this myth that lies at the heart of our malaise because it allows architecture to be self-justifying and above criticism, except occasionally from other architects. It is ironic that our knowledge-based society demands heroes and the design industries readily provide the necessarily unconventional heroes.

Recognising the dysfunctionality of our fragmented industry, the Construction Industry Council was formed in 1988 to begin to bring together the disparate parts, with a strong belief in the central role that education could play in bringing about change. In 1993 the CIC published *Crossing Boundaries*, jointly written by a chartered builder (John Andrews, Professor of Construction at the Bartlett) and a chartered architect (Sir Andrew Derbyshire, Chairman of the RMJM). Its remit was to find and support areas of commonality in our formation and to introduce the idea of continuing professional development (CPD) for all.

Although many of its recommendations have been implemented—and the present volume can properly claim to be part of its heritage—there remains considerable personal and institutional opposition to change. When the CIC was formed it was difficult to get senior members of the RIBA, the Institute of Structural Engineers, the Royal Institute of Chartered Surveyors and the Chartered Institute of Builders to sit on the same committee—let alone work together for a common purpose. Ten years later, that working together has engendered a greater mutual respect between the institutions (the CIC now has 51 member institutions, representing over 350 000 professionals in construction in over 19 000 firms).

Today, more than ever before, resistance to change is not an option. Many universities are undertaking a radical managerial churn that is leading schools of architecture into faculties of varying constituents—many of whom feel threatened by falling numbers and therefore try, disastrously, to hinder change. I believe that initiatives such as CUDE must be welcomed as a major contribution by our profession to the future of the construction industry.

Accepting that we are part of an industry is a precondition for change. The CIC holds an annual Heads of Schools (of all construction disciplines) Conference, and in 2000 it will be considering the consequences of *Rethinking Construction* for education. Sir John Egan's report (Egan 1998) demands that we shake off our inward-looking culture and become client-focused.

In this, he wants better value with a greater predictability of cost, time and quality. He identifies the elimination of waste, such as competitive tendering, as being critical for major clients, not just as a oneoff exercise but as the start of a process of continuous improvement.

The challenges for education are significant. Traditionally we have thought of ourselves as being 'the client's friend' in an adversarial culture. The latter is undeniable, the former increasingly anachronistic. How are we to educate ourselves to run alliances of professionals and specialists to deliver branded products at a small scale? While we are good at selling our concepts to other architects, we have developed a secret code that few others understand. We are frequently seen as poor listeners and, accordingly, not very client-focused. To what extent does our current education system promote such a situation and how can it redress the perceived shortcomings?

The Movement for Innovation has been charged with implementing the targets set in *Rethinking Construction* (Egan 1998). This is an initiative founded on a programme of demonstration projects (in excess of £3 billion across the whole industry), which, once their performance has been measured, will provide the information and the beginnings of the knowledge base of a new collaborative industry. Our schools need to draw on this knowledge, and we need to become part of a completely different industry. It demands structured feedback and an understanding of the consequences for design of whole-life costing, which has for too long been missing from the process. The programme is rich and the rewards huge, but it requires us to review our role—in the words of Egan (ibid.), to effect 'a change of style, culture and process, not just a series of mechanistic activities.'

How we choose as a profession to position ourselves is up to us, but the vanguard of tomorrow's quality design is being formed now and needs us to develop the greater understanding of our clients that they rightly have come to expect. I commend this book, not as a finished product, but as the next step in a continuing process of educational collaboration that is essential if architects are to play a leading part in the formation of tomorrow's environment.

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# 1

## **Architectural education and the profession**

### **Preparing for the future**

*David Nicol and Simon Pilling*

#### **Introduction**

Over the last 10 years numerous reports and studies have described how changes in society and in the construction industry are impacting on architecture and the other construction professions. A need has been identified for greater client sensitivity and responsiveness to user needs in construction and for more effective cross-disciplinary teamwork amongst industry professionals. Also, nowadays, not all architecture students go into mainstream architecture when they leave formal study: an increasing number are embarking on careers that only have a marginal connection with the construction industry. And as a result of changes in society, technological advances and the rapid growth in information, those entering a profession are likely to have to update their knowledge and skills many times over a lifetime. All this is calling on architects to become more skilled in the human dimensions of professional practice and more adaptable, flexible and versatile over the span of their professional careers. Architectural education must respond to these changes: it must enable students to develop the skills, strategies and attitudes needed for professional practice and it must lay the foundation for continuous learning throughout life.

This book presents a broad range of innovative educational responses to the needs of architectural graduates. This chapter provides the background to the rest of the book and is divided into four sections. Section 1 identifies the pressures for change in the UK construction industry and the architectural profession. Section 2 highlights issues of concern in architectural education in relation to preparation for professional practice. Section 3 discusses how learning and teaching within architecture could be realigned to meet the challenges posed by professional practice. Section 4 explains the scope and organisation of the other chapters in the book.

#### **1**

#### **Pressures for change in the construction industry**

##### ***The Latham and Egan reports***

Reports in the UK published over the last decade have examined the construction industry in the context of changes in society, and have made recommendations for radical change in industry practices. Two reports in particular stand out: *Constructing the Team*

(Latham 1994) and *Rethinking Construction* (Egan 1998).

The Latham Report (Latham 1994) was jointly commissioned by the government and the construction industry with the 'invaluable participation of clients'. The remit of the report was to review the procurement and contractual arrangements in the UK construction industry, with a particular focus on 'the processes by which clients' requirements are established and presented'. Latham saw clients as the driving force of the construction industry and the goal was 'to help clients obtain the high quality projects to which they aspire'. The report is principally concerned with the fragmentation of the construction industry, adversarial relationships and short-termism brought about by a 'lowest-price wins' approach. The answer put forward was partnering between customers and industry (based on providing best value, not lowest cost) and between the constituent parts of the industry. The main conclusion of the report was that, above all, better industry performance requires teamwork, and that achieving this would require much rethinking within the construction industry.

The Egan Report (Egan 1998) was the result of work by a construction task force set up by the UK deputy prime minister 'against a background of deep concern in the industry and among its clients that the construction industry was under-achieving, both in terms of meeting its own needs and those of its clients'. The report focused on the scope for improving the quality and efficiency of UK construction. It cited the findings of a British Property Federation survey of major clients, carried out in 1997, which found that 'more than a third of major clients are dissatisfied with consultants' performance in coordinating teams'. It concluded by identifying the need for 'a change of style, culture and process' within the construction industry and identified five 'drivers' of necessary change:

- Committed leadership.
- A focus on the customer.
- Integrated processes and teams.
- A quality-driven agenda.
- Commitment to people.

The Egan Report recognised that the achievement of these drivers would be inextricably linked to training. The whole industry would have to educate its workforce, not only in the necessary technical skills and knowledge, but also in the culture of teamwork. With particular regard to the professional designer, the report suggested that 'the high standards of professional competence in their training and development needed to be matched by a more practical understanding of the needs of clients and of the industry generally'.

It is clear from the nature of these reports that clients are becoming increasingly knowledgeable and demanding in their dealings with the construction industry and architects. The traditional client/architect/ contractor relationship has changed radically. Clients are no longer content to rely on the architect as primary adviser. Even one-off clients are more demanding and knowledgeable than in the past, and many clients, both one-off and regular, wish to be more involved in making design decisions. In addition, team working is increasingly demanded within and across built environment disciplines, as clients and users call for better industry performance and more integrated construction

services. Both these trends demand that architects acquire a broader range of people and communication skills.

### ***The public image of architecture and architects***

Over the same time period as these reports, and since, there has also been increasing scrutiny of the architectural profession by the general public and building users. Demographic developments such as the ageing population, new patterns of work and leisure, technological changes and society's demand for a more sustainable environment are leading the public to demand that architects develop a wider repertoire of design responses to the built environment. As a result there have been calls in the media, and elsewhere, for architects to demonstrate greater sensitivity in their designs to the needs of building users and society, and for them to communicate more clearly the meaning behind their work. Not only must architects develop interpersonal skills in relationship to clients and other professionals, but they must also become better at listening and responding to, and communicating with, building users and the public. In addition they must become more effective advocates of the contribution that they make to the quality of the built environment and to society.

### ***The architectural profession and its education***

In parallel with the Latham and Egan Reports, the construction professions and their associated professional institutes have been reviewing their changing role in society, the expectations of that society and the implications for the aspects of the education system that they validate. For architecture, the Burton Report—the findings and recommendations of a Royal Institute of British Architects (RIBA) steering group on architectural education (RIBA 1992)—set an agenda for change. Its recommendations were to be extensively developed in the RIBA's subsequent additions to the *Strategic Study of the Profession* (RIBA 1992, 1993, 1995).

In Phase 2 clients and architects reported that:

the gap between clients' needs and the service provided by architects is much larger than we could have anticipated...and seems to be growing...it demands radical action, if market forces are not to diminish further the status and role of the architect, and the architects' ability to influence the built environment.

The study indicated that architects were generally not seen as good listeners, communicators or team players. Clients believed that these shortcomings reflected the architects' attitudes, beliefs and training, and concluded that urgent and radical steps should be taken to

Re-examine what the educational process ought to achieve from a client perspective and reinforce elements which address client needs without threatening the "magic" which clients look to architecture to provide.

Another research study at around the same time drew similar conclusions. Lawson and

Pilling (1996) sought to discover what relationship existed between the services that architects provide and those desired and valued by clients. The researchers interviewed both clients (from large institutional organisations) and architects. One area of questioning was the extent to which the client is involved with and understands the design process. Typical responses from clients to this issue were:

Architects don't explain their services well...part of it is protectionism. In general architects are not good at putting over what they do, there is an inbuilt arrogance within the profession that makes them difficult to approach.

They've [architects] got a vision in their head which we can't see, it might be a fantastic vision and they might be able to draw it down in time and have a contractor produce it, but it's no good if we can't see it.

It was clear from this study that not only clients but also architects themselves were aware of the problem. Typical responses from architects were:

The single thing which is most important is that the form of presentation used is one the client is able to read and understand.

I make an absolute point about talking in lay person's language... a famous ex-president of the RIBA went on about 'dynamic contextualism' on television. What...does it mean? I don't know what it means and lay people are left absolutely clueless after remarks like that.

However the architect must be able to do more than clearly describe the benefits of a good design to clients. Communication is not just about effective description: equally important is listening to clients and negotiating and facilitating the processes of building design. Much of the frustration that architects and clients experience in design stems, according to Lawson and Pilling (1996), from a failure to engage with the client. They recommended that schools of architecture 'should engender a more client-centred approach in the educational process and develop the necessary skills of listening, extracting the brief, negotiating agreements, making presentations and managing client relationships'.

The RIBA obviously has a role to play in promoting the development of communication and teamworking in schools of architecture. In the recent *Review of Architectural Education* (Stansfield Smith 1999) the RIBA made some radical recommendations in this regard. The following extract from that review is central to the concerns of this book:

The hothouse climate of architectural education can be extraordinarily productive. Among other things, architects learn sophisticated spatial ordering systems which, as a way of thinking, can and are applied to many situations whether real, virtual, technical or cultural. But it can also encourage the idea that architectural discourse is esoteric by nature and therefore of limited use for communication purposes. Such a tendency isolates architecture from its public and its procurers and diminishes the vitality of the discourse itself. Architecture needs to flourish as a language to engage its public, to generate the demand for



architecture and qualities it represents.

Stansfield Smith (1999) concludes that the key to a successful architectural profession is not only that profession's ability to represent quality and deliver high standards, but also its ability to represent the values and aspirations of the society it serves. Many of the authors in this book have been closely associated with this wide-ranging review and their chapters resonate with most of the concerns expressed in the final report.

### *The rapid growth in knowledge*

Over and above the necessary technical and interpersonal skills, there are other skills that architects must possess. The rapid pace at which knowledge is growing means that they, like all other professionals, need to develop strategies to deal with new information that may be relevant to their professional development. There are two aspects to this. It is essential that architects, as part of their training, have learned how to learn, so that they can keep up to date as the industry and the profession change. But also, because of the sheer volume of new information and the range of media by which this is made available, architects need expertise in accessing, identifying, evaluating and prioritising information. All this implies a high degree of autonomy and flexibility in learning throughout life.

## **2 Issues of concern in architectural education**

The reports and studies quoted above clearly have implications for the nature of architectural education. Design education, as undertaken in the schools of architecture, appears to be preparing students for models of practice that are no longer in full accord with the current professional context. But what is it about design education that is not supportive of the needs of professional practice?

Architecture is a multidisciplinary field of study that draws on the arts, sciences and social sciences. There are five areas of study in the UK architecture syllabus (Part 1 and Part 2) as well as a practical training requirement (Royal Institute of British Architects and Architects Registration Board 1997). The five areas are: architectural design; the cultural context of architecture; environmental design, constructional and architectural technologies; communication skills; professional studies and management. However, the most important part of architectural education in terms of curriculum focus and time spent by students is architectural design. It is in the design studio that students are expected to bring together knowledge from the different disciplines to inform the development of their architectural designs.

The design studio offers the potential to provide a multifaceted and enriching learning experience. One inherent educational strength in studio teaching is the implicit commitment to 'experiential learning' or 'learning by doing'. Donald Schön (1987), in his work *Educating the Reflective Practitioner*, describes design studio teaching in architecture as a 'practicum'—a setting designed for the task of learning a practice. In a context that approximates a practice world, students learn by doing, by undertaking projects that simulate and simplify practice. Schön calls this a 'virtual world', relatively

free of the pressures, distractions and risks of the real world, to which it nevertheless refers. 'It could therefore be seen to stand in an intermediate space between the practice world, the lay world of ordinary life, and the esoteric world of the academy' (Schön 1987).

However, and crucially, Schön goes on to observe that the virtual world of the studio becomes a collective world in its own right, with its own mix of materials, tools, languages and appreciations. For the student it embodies particular ways of seeing, thinking and doing that tend, over time, to assert themselves with increasing authority. It is this feature of the studio which is seen to hold both the strength and, potentially, the greatest weakness of architectural education as a preparation for practice (Cuff 1991).

### *Communication and teamwork*

#### *Isolation of the design studio*

Architecture in practice is a participative process involving communication with many stakeholders in design: clients, users, other architects, engineers, specialist consultants, construction managers, statutory authorities and so on. However the schools, through both their formal structures and their more informal socialisation processes, may not be fully preparing students in the skills needed for participative practice. Dana Cuff (1991), in her work *Architecture: the Story of Practice*, proposes that the inward focusing of the design studio, where students work long hours at the drawing board, results in students becoming isolated from the outside world, knowing only how to talk to other architects.

#### *Primacy of the individual*

In the construction industry it is well-established that effective architectural practices, in terms of both design quality and business, tend to be associated with a culture of teamwork and collaboration. Moreover, many of those responsible for teaching in the built-environment disciplines are committed to developing these skills in students (see Chapter 17 by Wood of this book). However the design studio in schools of architecture still remains primarily geared towards developing individual star architects as unique and gifted designers, rather than preparing team players. This is what Cuff (1991) terms 'the primacy of the individual', which is an inevitable consequence of the principal social relationship in a school of architecture—that between studio tutor and student. In contrast, she refers to the reality of the architect's role in practice as that of 'translator', employing design—the art of architecture—to mediate between human function and the final form. Worthington develops this proposition further in Chapter 2 of this book, where he describes the role of the designer in practice as that of an 'integrator', drawing together people, process and place in order to create a coherent working environment. In professional practice, skills in managing interpersonal relationships enrich and extend the boundaries of design thinking rather than constrain them.

The familiar model of architectural education seems unlikely to foster in students a positive attitude towards collaboration—what Egan (1998) calls the crucial 'culture of teamwork'—while it remains primarily geared to developing individual stars rather than

preparing team players.

*Communication and interpersonal skills are not systematically developed or assessed*

Design studio learning embraces numerous forms of representation—visual, verbal, tactile, written—and is therefore rich in communication potential. It also sometimes involves students working in groups, and so it is arguably rich in teamworking potential. Yet in schools of architecture there is usually little *systematic* development or assessment of communication and interpersonal skills. Even though in practice architects need to be able to communicate concepts to different audiences (for example specialist engineers, clients, the public), it is not common for students to gain experience in tailoring their presentations to these different groups, or for this ability to be assessed. More importantly, the skills required for two-way communication, as against mere presentation, are even less likely to be purposefully developed and assessed. Furthermore, group-working on designs in schools is normally restricted to the early research stage of a project, with the final design invariably produced and assessed on an individual and competitive basis. Hence assessment processes in schools do not specifically encourage students to share and develop their ideas with each other.

The main form of assessment in architectural education is the review or ‘crit’. The traditional structure of this has been criticised. It has been argued that the review lays the foundations for an adversarial relationship between presenter and listener, which is then taken forward into the professional’s dealings with non-architects (Boyer and Mitgang 1996). The review has also been criticised for being the breeding ground of architectural jargon (Cuff 1991). In Chapter 10 Wilkin reports the results of a recent study of students’ and tutors’ views about the effectiveness of the review in relation to the development of communication skills.

*Brief-building is unrelated to design in practice*

Brief-building in practice is a wide-ranging process that relies on the architect putting him- or herself in the shoes of the client while negotiating and analysing requirements in a context of regular discussions. Yet design briefs in architectural education typically grow from a tutor’s construct, and any subsequent analysis of the brief is invariably carried out by the student as a form of private research. Insufficient attention is thus paid to the human interactive skills (for example listening, questioning, negotiating, explaining) needed to delve into a client’s aspirations, values and concerns. In this can be seen the roots of client observations of architects such as the following:

Almost the sole reason for the architect being mistrusted [is that] they will take a brief off somebody and go away and produce something which is not quite right...they have not understood the real aims of the project and what has gone on before they have come on board (Lawson and Pilling 1996).

For the practising architect, brief-building and design proposals are parallel activities—

the former not being completed until the latter is finalised and agreed with the client. Problem and solution emerge together rather than one necessarily preceding the other—the design in parallel with the brief. This raises an issue: does the academic environment promote a belief in students that these acts are serial—firstly create (or receive) a ‘finished’ brief and then design a proposal. The question of brief development, both its subject and its manner, is a recurrent theme in this book.

### *Design as product rather than process*

Architectural design has been defined as ‘the intelligent and directed use of physical resources to achieve what users, clients and society really need—as opposed to what they may demand—now and in the future’ (Duffy 1995). This relies on developing in students a particular way of design thinking:

Architects, compared to most disciplines, and certainly to every other discipline in the construction industry, are distinguished by deploying two extremely powerful and characteristic ways of thinking:

- we invent
- we use our skills to relate what we invent to the aspirations of those who use our buildings

It is the combination in action of these two special ways of thinking...that ultimately adds up to what we mean by architectural knowledge (ibid.).

The architect’s role is to provide a medium in which these different aspects of design come together. These ways of thinking are not practised in isolation but are performed within a multidisciplinary context. According to Stansfield Smith (1999) ‘there is a dynamic equivalence between the skills needed to develop a design proposal and the skills needed to realise a design proposal—from identifying the possibility to post occupancy evaluation’.

In schools of architecture priority is given to ‘design as product’—in terms of visual and graphic output—rather than to design as a dynamic and interactive process. The educational emphasis in the design studio is primarily on the student’s models and drawings. This is most clearly reflected in the conduct and focus of assessment through tutor feedback and reviews. Students are not usually rewarded explicitly for their analysis of user or client needs unless they result in a creative addition to the conceptual design proposal—even though a great deal of analytical thinking may have been undertaken by the students. In Chapter 3, Morrow goes further and argues that ‘students typically come to understand analysis in an oppositional relationship to design’, and that this has negative repercussions on the range of social forms that emerge in their designs. Jarrett (Chapter 5) reinforces this view when he notes that urban design projects in schools are not about ‘cultivating a sense of place and belonging’, rather they are conceived as art objects, ‘disconnected from life on the streets’.

A further example of the emphasis on product is the tradition in architectural education that students assemble, during their undergraduate years, a tangible product in the form of