Research, knowledge and collaboration

Dilemmas of the PFI

Research and architectural knowledge

The discussion of the state of research and practice in architecture in recent issues of *arq* has been triggered by the results of the 2001 Research Assessment Exercise and the prospect of the next RAE in 2008. For the architectural profession I would argue (in Panglossian fashion) that the RAE 2001 may turn out to be for the best in the long run. There is nothing like a poor result, especially if felt to be ill deserved, to concentrate the mind.

It has prompted the RIBA to set up a new department and committee for Research and Innovation (Jack Pringle *rae2001*, pp104–106), and as the letters page in *arq* testifies, it has stimulated considerable discussion among both the academic and practice communities. It seems timely, then, to take stock of what exactly constitutes architectural knowledge, and so what constitutes advancement of knowledge in our field. This will be one of the tasks facing the newly renamed ‘Architecture and Built Environment’ sub-panel of the RAE 2008. If that can be established, and a consensus reached, then the RAE 2008 could become a valuable exercise in helping to direct limited research funding towards those with the best record of delivering results.

Professions are defined by the knowledge they possess and exercise. A professional takes responsibility for a client’s risk in helping to make decisions where much rides on the outcome. It is their specialist knowledge and experience of previous cases which allows good judgements to be made. This is the case for lawyers and doctors, and we all have – or perhaps think we have – a fair idea of the kinds of knowledge that constitute these domains. But what about architecture? There is no doubt that architects work in a domain which carries extremely high risks, and which is inherently uncertain. Without uncertainty there would be no need for professional judgement. But is that judgement inherently subjective or objective? Much turns on the answer to this question. If our judgements are largely subjective it is hard to argue that knowledge matters. However, if we believe that architecture ‘matters’ – that one can ‘get it wrong’, and history would support this thesis – then we have to go with the latter: architectural knowledge is objective in that others can suffer the consequences of our actions, and their suffering and its causes are a matter of objective reality. My own research, and that of my colleagues, leaves me in no doubt that this is the case.

However, architecture differs substantially from the other professions in one respect. While doctors and lawyers bear wider social responsibility in ethical codes, they are in the main dealing ‘one to one’ with an individual client’s interests. However, architects deal not only with today’s client, but also with building users, the public at large and future generations, all of whom have to inhabit the consequences of their judgement. To add to the difficulty, architecture functions physically, environmentally, culturally, socially and economically, and although each of these domains is independent, they all interact. Each entails risks, and knowledge of radically different kinds is needed to deal with those risks. This means that architects can seldom adopt a single point of view in exercising their judgement, but they must look at things from many, often radically conflicting, perspectives. This is one of the skills architects gain through design education.

The task is not simple. From time to time the profession, faced with the complexity of its field, has relinquished responsibility to other professions for one or another aspect of its task. This in turn has led to a division of labour in the built environment professions and the need to integrate a design process involving many specialisms. The responsibility for that integration still rests mainly with the architect, and for the very good reason that it is a single thing – the building as a spatial and material object – which functions or fails in each of these domains, and it is ultimately the architect who shapes this object and so unifies the domains. In thinking about the body of knowledge that defines the profession of architecture, it is clear that the process by which shape is given to built form and space is a central concern. Equally important, however, are the interfaces between architecture and its allied disciplines – the holders of specialist knowledge in various domains who sit around the design team table and bring their expertise and critical analysis to bear on the current state of a design.

Architecture is a cultural medium, an environmental modifier, an economic good and a social product, but it is more than all these – more than just sculpture writ large, shelter or an asset on a balance sheet – it shapes society in direct and fundamental ways. Organizations thrive in space that
supports communication and stagnate in the wrong environment. The same can be said for hospitals, shops, schools and urban communities. While structural, constructional, environmental and economic aspects of architectural function have successively become the domains of engineering professions, the cultural, social and integrative functions of design have remained firmly the concern of architects. I believe that there is a reason for this – as knowledge becomes explicit and codified it allows a division of labour into specialisms, but the integrative core of architectural and spatial ‘form shaping’ remains an exercise in the application of tacit knowledge.

In view of the complexity of the domain it may seem surprising that anything ever gets built. And yet the architectural profession and its research base in the schools of architecture in the UK is remarkably healthy. Here I differ from many of those who write to these pages, but look at the evidence: our practices are world leading, our graduates sought out around the world and our courses in the best schools oversubscribed by 8:1. We take our pick of the brightest A-level graduates with entry standards as high as medicine and law and we attract international students at postgraduate level in large numbers. All these are signs that architecture in the UK is getting something right. These successes in practice and education would be impossible without an equally strong base in excellent research. Architectural research is both well funded (against international comparisons) and delivers a world lead in a number of key fields. In particular, the UK research base has developed the methods underpinning our understanding of the social, economic and environmental consequences of design at both building and urban scales. This gives it a lead in research into sustainability and responsible design. It is also strong in the fields of historical research and critical theory, in the development of computing and in research into design itself both in terms of the study of morphology and of design processes. The UK has a long tradition in these areas, however in recent years it has also developed strength in research through design.

There is a very specific sense in which buildings themselves can be considered as theoretical propositions. When we design, we test hypothetical forms against the constraints imposed by site and brief, and as with any other practice based discipline we learn through doing; to paraphrase Donald Schön, architecture is a form of reflective practice. In a field as complex and interactive as architecture, research through design allows holistic propositions to be tested in a way that more conventional (dare I say, reductive) approaches cannot do. It also allows for experiment and innovation in the process of design itself, and this is where tacit knowledge is developed and tested. This form of research merits attention, not only because architecture leads other knowledge based disciplines in the development of practice based methods, but also because of the success with which it has been integrated with design education and its effect on innovation in practice.

The importance of historical study and critical theory to the culture of architecture rests here. In a field where key aspects of knowledge are tacit and expressed in the final form of the building itself, there is an important role in the analysis and translation of this into language. Understanding the social, cultural and economic context of historical precedent is important for those engaged in the design of new forms, and it is the critical theorist and the historian who brings material design into the field of discussion within the profession.

**Research and practice**

Recent correspondence in arq raises important questions about the relationship between the wide range of research being undertaken in the schools, and architectural practice. John Worthington (arq 7/3+4. pp197–199) makes a particularly important point when he says that architectural schools and the profession ‘cannot afford to stand aloof from the other (construction related) disciplines’. In many Universities (my own included), the discipline of architecture lies within a larger ‘School of the Built Environment’. I see this as entirely positive. The schools must reflect, and respond to, the contemporary realities of practice, if their relevance is to be maintained. As with practice, both teaching and research is increasingly based on interdisciplinary collaboration. While taking place within institutions, such collaboration between institutions and the wider construction industry (manufacturers, contractors and so on) is now often regarded as a prerequisite for successful research bids to both UK and European research funding agencies. Our school has found that many businesses within the construction industry (large and small) now recognize the value of research to the development of their products or processes. Professional practices are also benefiting in a similar way, in recognizing the expertise (and facilities) that reside within the Universities.

There are other encouraging signs. Increasingly, applied research underpins innovative practice, and practitioners seek out consultants with a track record in research to strengthen their design teams. This reflects an understanding that an evidence-based approach to many design problems can be very powerful (and sometimes essential) in raising client confidence and reducing risk. Testing and analysis, whether of the real thing (ie a full-scale mock-up), or through computer-based simulation, has become an almost standard part of the design process, particularly for larger projects. Planning Authorities increasingly require ‘micro-climate assessments’ of new development proposals. We have also learnt that post-occupancy surveys are invaluable in revealing what does and does not work for the occupants of our new buildings. In these ways, knowledge from research is being transferred into practice, and the universities
provide an invaluable service to practice in this regard.

Even the traditional division between research into history and theory, and more technically focused design issues, has been addressed by the recent call by the EPSRC and the AHRB for proposals related to ‘Design for the 21st Century’. This is an extremely important initiative, recognizing that if we are to successfully address the major issues facing the built environment, we will only do so through cross-disciplinary collaboration.

**arq** provides a vitally important forum where the full spectrum of research within the built environment can be discussed. I believe it should concentrate on the ‘big issues’ and that the relevance of particular research to these issues should be made explicit. We must all get used to stepping outside our normal ‘comfort zone’ of endeavour and talking to others who have a different view of the world. Who knows, we may find out how much we have in common!

Brian Ford
Nottingham, UK

Brian Ford is Professor of Bioclimatic Architecture and Head of the School of the Built Environment at Nottingham University

---

**PFI culture**

Although the Department for Education and Skills’ ‘Classrooms of the Future’ and ‘Design Exemplar Initiative’ are to be welcomed ([arq 7](arq)/3+4, pp244–279), they should not be allowed to obscure the far-reaching issues involved in the Public Finance Initiative (PFI). As a procurement process, PFI represents a massive investment in social programmes and public building projects: the estimated £34 billion in contract or commissioned gives an indication of this. PFI transfers the responsibilities and risks associated with the procurement, delivery and management of public buildings and estates over a period of 25 years to the private sector, and almost none of the expenditure involved is reflected in the Public Sector Borrowing Requirement. This makes it highly attractive to government, but the question remains as to how much it mortgages the nation’s future because it merely defers and extends borrowing. If schemes mature at a time of recession or serious budget deficit, the implications could be highly damaging.

PFI involves the privatization of what had previously been a public sector responsibility, through a process that is complex and difficult to comprehend, as so much depends on detail. Its advocates argue that it promotes better public buildings because, by investing more in the ‘upfront’ construction costs, long-term savings should accrue through cheaper maintenance and running costs, and more efficient facilities and estate management. This sounds convincing in theory, but has yet to be proved in practice. Bidders still appear to see the construction contract (capital money) and facilities management (revenue) as separate. It is in the interests of Local Authorities to encourage joined-up thinking, but beyond their own interests of expediency, utility and economy, there is little pressure on bidders to regard whole-life costing as a priority.

A major objective of the PFI process is that government, ie Local Authorities, are committed to a transfer of their own risk to the bidder. This makes the process expensive because of the time-scale and the dangers of having to cover the unforeseen over such long periods. ‘Risk Costing’ is part of the comparison between private and public investment, but this can be distorted in favour of the private sector by allowing larger percentage overruns on costings.

The government also gives Local...
Authorities an annual grant of +5.5% of the value of the PFI schemes they commission, but there is no corresponding sweetener for publicly funded projects. Private financiers are also permitted to use discount rates out of line with inflation, and public bodies in turn can reclaim VAT on privately funded schemes, factoring them by +5.5%.

The transfer of risk demands more and more detailed audits of every element and process. Room data sheets are required as an essential part of any bid, but it seems unnecessarily profligate to have to decide all the loose furniture, rather than cover it with a provisional sum that could be analysed and spent at a later stage when there is less pressure and more knowledge of the brief. Such a provisional sum would be the same for all competing bids, and might also deal with IT, provided the Local Authority had adequate competence on how it is spent.

Most Local Authorities have no architectural representation in house, so there is little understanding of the commitment needed to achieve design quality. Even if they had, it would probably not be at the level to make a significant difference: high-calibre Design Champions and Advisors are not easy to find, and there is always the likelihood that the Technical Advisor, normally a Quantity Surveyor, testing compliance, will take the lead. A PFI contract is also, in effect, signed at RIBA Stage C/D (but in reality Stage C – Outline Design). In a design and build contract, architects would normally recommend to the client that there would be no novation, or transfer of responsibility to the contractor, until at least stage E (Detail Design). At stage C/D much of the detail is not confirmed and there is considerable scope for the contractor to squeeze out quality.

The use of preliminary reference schemes, as advocated by CABE, is a demonstrable commitment to design excellence. These are more searching than feasibility studies and set a strategic framework for the key design issues which vary for each scheme.

It also needs to be remembered that in a PFI contract, the contractor is the architect’s client because it is the bidder who remunerates the design team. This separation of the user client and the design team at critical stages is probably the major concern of designers operating in a PFI contract. However, this varies from project to project and from bidder to bidder. Who translates the needs of the ‘real’ client – the education authority, the school, the users of the building – when it gets down to detail, is the contentious issue. The bidder will, understandably, always make commercial incentives override other considerations. Sometimes, these incentives are misguided, because design quality, even at a detail level, should represent the added value and well-being that frequently leads to long-term success and educational acclaim.

This separation of user and design team at crucial stages can have a profound impact on the understanding and resolution of a complex brief in a particular context. Some bidders are more generous and understanding in how they use their designers and, if they are using talented professionals, will enjoy commensurate rewards. Even so, the window of opportunity for the designers to innovate, explore and research in a PFI contract is invariably too small.

Despite this curtailment of design, if one compares a PFI programme with a normal, traditional programme of procurement, it requires a very much longer period (twice to three times) in the run-up to a start on site. The additional time is explained by the accountancy and legal audit, checking and appraisal systems that must be incorporated into an intense and detailed procedure that is to cover a contract lasting 25 years. Unless this procedure can be simplified, the time and complexity involved, together with the scale of the programmes, are likely to get longer rather than shorter.

In assessing PFI bids, most Local Authorities employ professional surveyors to provide a structured numerical evaluation matrix. This will identify any major discrepancies in the competing bids, in terms of quantifiable differences in areas and numbers, eg parking spaces, games pitches, surplus land and so on. All of this is necessary to prove compliance with the complex Invitation To Negotiate (ITN), but the emphasis of this evaluation procedure is on ‘process’, rather than on the quality of the various designs. It covers matters of compliance with not only the ITN, but also with a Local Authority’s policies, planning guidelines, regulations, health and safety, programme brief and so on, but gives inadequate weighting to design quality.

To redress the imbalance and recognize the importance of design and its added value, an alternative matrix needs to be introduced. In West Sussex, where I have been involved as Architectural Advisor, six strategic headings were used with what were considered appropriate weightings: Concept (30%); Educational Ethics (15%); Context (10%); Social Generator (10%); Sustainability (10%); Design Competence (25%). Consultations are necessary to complete this evaluation, among which discussions with Heads of School and representatives of Education Authorities are the most important. Drawing tight boundaries around these headings is almost impossible, but in view of the scale of what is involved financially, bidders would not accept more conventional ‘holistic’ architectural comparisons, dependent on informed experience, even though the Advisor involved had a national standing. With PFI, the demand for numerical and supposedly ‘objective’, measured assessments is here to stay, and learning how to cope with it will be a key skill for architects determined to achieve designs of lasting quality.

The only element that is constant throughout the 25-year duration of a PFI contract is the building itself. Everything else changes, the curricula, the head teacher, the staff, the parents and pupils. Success depends to a large extent on the quality of the design, and yet it is the one part of the process that is currently short-changed. This need not be so, but to ensure that design is given due recognition, architects need to become involved in shaping the PFI process, not accept an ever-diminishing role within it.

Colin Stansfield Smith
Winchester

Sir Colin Stansfield Smith is a Design Consultant and Emeritus Professor at the University of Portsmouth. His work as Hampshire County Architect was recognized with the award of the 1992 Royal Gold Medal for Architecture

Letters for publication should be sent to:
Richard Weston
arq
The Welsh School of Architecture
Cardiff University
Bute Building
King Edward VII Avenue
Cardiff CF10 3NB, UK
Tel: +44 (29) 2087 4926
Fax: +44 (29) 2087 4431
E: WestonR@cardiff.ac.uk

The Editor reserves the right to shorten letters