

Edge Debate 58 – Is creating an Institution of the Built Environment the answer to a ‘fragmented and ineffective’ industry?

29th May 2013 – The Royal Academy of Engineering, London. Sponsored by the Chartered Institution of Building Services Engineers.

WELCOME

ROBIN NICHOLSON CBE – Edge Convenor; Senior Partner, Cullinan Studios

Robin welcomed everyone. He thanked CIBSE for sponsoring the debate and Alan Penn for agreeing to chair it.

CHAIR'S INTRODUCTION

PROF ALAN PENN – Dean of the Faculty of the Built Environment, UCL

In a faculty of many disciplines, Alan noted that even achieving a shared vocabulary was hard. He acknowledged the Edge's championing of interdisciplinary working, but he saw maintaining 'edges' between disciplines was not always a bad thing; in fact edges were often best left unresolved. He introduced the speakers.

TERRY WYATT PPCIBSE - Edge Member; former R&D Partner, Hoare Lea.

Terry started with his proposition for a single building engineering industry. Despite the repeated counsel of Egan, Latham and Morrell, the building industry still retains all its old siloes, out-dated work practices and demarcation lines that mirror those that led to the demise of UK's shipbuilding and aircraft industries – lessons they've since had to learn in rebirth. He cited the building services industry's failure to deliver efficient, comfortable and reliable buildings as a symptom of its silo-ed practice.

Design, construction and manufacturing are rigidly sectioned-off within the 'delivery professions', and are represented by multiple institutions, but with the key disciplines of FM and operational engineering left remote and unrepresented – often with disastrous consequences. A crucial first step must be to integrate these disciplines in the construction professions and delivery teams, recognising the importance of FM in shaping good design and selection decisions.

Terry argued that Building Information Modelling is fundamental to process integration and reform of outdated work practices. It facilitates a joined up team approach and the transformation of outdated building methods - with pre-

assembly replacing site construction to assure build accuracy, quality and safe working.

Effective construction also needed a better balance of effective participants. Universities produce more architects than needed, but fill only half UK's vacancies for graduate engineers. Perception has long been a problem in enrolling building services engineers - the title is inaccurate and lacks caché; 'building engineering' would be more attractive.

Things are too far gone to invent a new industry – but much needed change could be achieved by consolidation and reformatting. At the heart of this lie the institutions, since they govern the scope of their membership rolls, define education and qualification, and determine the wider perception of the professions.

The amalgamation of CIBSE with IStructE would be an innovative spring-board towards a single building engineering profession. It would provide an essential home for operational, pre-assembly, manufacturing and other cross-cutting, game-changing, expertise in construction. Both institutions would benefit from sharing overheads, R&D, and from increased influence with Government, other stakeholders and society. Perhaps its importance might even see it become the Royal Institution of Building Engineers – RIBE!

Such a formation might also assist the RIBA and the architectural profession to wake up to the new realities! Possibly in time, a built environment profession might be spawned? But in any event, the amalgamation would bring about much of what Latham, Egan and Morrell sought.

DR MIKE MURRAY – Edge Member; One Creative Environments Ltd.

Mike gave an overview of his 34 years in the construction industry, including heading up the multidiscipline design office of a leading D&C contractor, in process R&D, and as an institutional advisor. To him, this period saw construction suffer a succession of 'improvement initiatives' – none of which helped much, other than Wolstenholme's "Never Waste a Good Crisis" – which summarises earlier improvement campaigns and provides an evidence-based

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analysis of the key blockers and the downward spiral. All the findings in Wolstenholme’s report are still recognisable in the industry today.

Mike latched onto Morrell’s Innovation & Growth Team’s concerns about the lack of leadership in construction. He especially mourned the loss of design leadership, subjugated to new procurement models that see influential contractors rule.

Mike argued that, at their heart, institutions only do two things:

1. Gather & publish the collected knowledge of practice
2. Provide a register of competent people

Amalgamation of institutions risks depleting knowledge. Knowledge that’s negotiated with other, sometimes opposing, interests - will lack incision. Specialisms could get lost as the specialist volunteers that institutions depend on lose heart and fade away.

There are models of overarching engineering institutions – for example in Eire and Hong Kong. But building services engineers in both places have had to turn to institutions like CIBSE and ASHRAE for their specialist knowledge.

Mike saw a different solution. His analyses of D&C projects, where all players were known and measurable, showed that the differential between “good” and “bad” projects had more to do with the quality of Design Team Leadership than the actions of the Project Manager. But he observed that current design leader models often didn’t work. Architects used design leader fees towards fulfilling their architectural ambition while contractors were monopolistic in nature and averse to the openness of good design leadership. Both CIC and RIBA were wrong about leadership because in their most recent publications they perpetuate the old assumption that the architect is in the best position to lead unless the project has a distinct engineering bias. Effective design leadership involves soft skills and a continuum of knowhow from inception to aftercare.

As there is neither training nor a professional home available for design leaders, Mike proposed developing a national college of design leadership drawing from

all the professions – with entrants being able to leave their disciplinary origins behind them when fulfilling the leadership role. He surmised its graduates would achieve far more than institutional mergers and simultaneously ensure the continued contribution of institutions to knowledge development that their critics take for granted. The test, in years to come, would be that all those running building projects would, at some time in their development, have been successful Design Team Leaders.

DISCUSSION

[Note: participants from the audience are anonymous - following the Chatham House Rule.]

ALAN PENN (AP): In summary there are 2 propositions: an institution to bring things together versus a non-institutional remedy involving confluent, soft, leadership skills. The two views are not necessarily in opposition. He started the debate by interrogating some of the cited commentators, if Egan is right, the first Jaguar off the production line is the test case – not the 10,000th? Does this fit to construction?

TERRY WYATT (TW): Egan is not really right in applying mass production thinking. Latham is better and many of his views are shared by Morrell. Both make the point that the UK construction is not going forward. It doesn’t parallel the car industry but it better matches bespoke shipbuilding. The challenge for UK construction would be to contemplate China delivering our next generation of buildings as flat-packs.

AP: If all is down to leadership, surely we must all believe and subscribe?

MIKE MURRAY (MM): Amalgamating institutions is not a remedy. It’s not even as easy as Terry suggested – e.g., the IET, not CIBSE, is the preferred institution for building electrical engineers. Architects, who are often appointed “architect and lead designer” to coordinate teams, see no distinction between design and leadership if tasked with both roles. So getting them and other professions to subscribe to team leadership of the process rather than the product is a challenge.

‘A’: I’d hoped to hear more about integrating design and supply sides with operations. While design and supply integration is essential, FM is the trailing edge – underpaid, under-skilled and a poor fit within our institutions.

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‘B’: I’d imagined the discussion would pick up on a former Edge debate on creating an institute of building performance. It hasn’t. Don’t we need an independent view to remedy the ‘performance gap’?

‘C’: Working with leaders in a transactional age who operate top-down and short term, I recognise we need transformational leadership.

‘D’: is it within anyone’s power to do anything about the problems with so many incumbents lodged immovably? Change only came to car, ship and aircraft building because they were in such dire straits that they were taken over by new cultures.

TW: Surely we have enough resolve to take on the lessons of the car, ship and aircraft industries and not fail for the same reasons?

MM: The issues relating to Q2 are already covered in the debate note on the Edge website. Q3 is a societal issue in a fast-buck culture which institutions’ values and ethics might help combat. Q4’s examples are not realistic models for our fragmented construction industry since we lack the power of a single integrator (like BAe or Ford / Toyota et al).

AP: Moving the discussion on: What store do we set by common values? Does a prototypical institution need these for people to buy in?

‘E’: On a related question; given IStructE, RIBA and ICE are cliques, when we need institutions that embrace new skills and inputs like operational focus. But recognising that they ‘do a job’, isn’t the Royal Academy of Engineers a better model, even if it lacks ‘reach’?

MM: The problem with our institutional set up is that multidisciplinary professionals have no natural home in any of them.

‘E’: So can’t we get our institutions to change?

‘F’: Values were the centre of an earlier Edge debate. As someone much engaged with the issue, values and ethics are a better starting point for inclusive discussion than technology which divides players into silos. In medicine the Hippocratic Oath creates an overarching common cause. Can we come up with something similar that defines us?

‘G’: Will the new degree in Built Environment help?

AP: Similar suggestions flow from a number of disparate groups.

TW: Who’d put the BE course together? Wouldn’t it be skewed to its sponsors’ aims?

MM: Can so much be crammed into a single course? What about evolving stuff? Robert Stevenson, a foremost railway designer, was rejected for membership of ICE in the 19th century! Perhaps the effect of an ‘all knowledge ambition’ would be to debilitate?

TW: The issue is not about imparting ‘all knowledge’ – even if that were possible! It’s about sharing knowledge which can be done using systems like BIM.

‘H’: Shared concerns about institutions with closely defined boundaries when technology is pushing for cross disciplinary understanding – so welcomed any mechanism that leads to more openness in the future.

AP: Are we saying no to fragmentation and yes to specialisation? Each dimension has different laws. If a long term investment must be sustainable and thus capable of adaptation, the argument for strong teams with good design leadership would include eliciting good client briefing & decisions.

TW: Again, it underscores the case for BIM integration.

‘I’: Government has set an ambitious agenda for rolling out Level 2 BIM where building elements & components are both geometrically exact and able to ‘describe themselves’ in the model. It’s powerful since the model contains all information needed by all involved - from design inception to decommissioning. As the sole source of all information, everyone works and interacts on the ‘same page’ in evolving detail – avoiding wasteful errors and misunderstandings.

‘J’: We are a very diverse industry reliant on many skill sets. We must recognise that we can’t change what we are within the timescale needed to fix the problem. BIM has a very strong place in more effective working. But the challenge for the built environment is dealing with our vast stock of small buildings – where BIM currently offers little. So the need persists for other means of holistic working enabling disparate organisations to work together.

‘K’: BIM is a valuable management tool. But the ‘performance gap’ involves many things BIM can’t remedy, like absent skills and know how. However, BIM does enable us to glean and feedback knowledge from building outcomes which is much lacking at the moment.

MM: Sceptical about BIM and ‘BIM-wash’. The progression from drawing board to 2 and 3-D CAD into BIM was rife with missed opportunities. BIM is just one tool in the tool kit and may not be all that it’s trumpeted to be.

‘I’: The evidence of those engaged with BIM is very different. Its subscribers adopted BIM well before Government - because they saw hugely valuable

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opportunities in process and construction practice. None of the true BIM players would choose to revert to the ‘old ways’.

‘L’: Education underlies this debate. Germany’s supremacy in car-making flows from 1781 when Frederick I introduced a technical education – the basis of the German Enlightenment. In the UK, rational thinking is regarded as the enemy of creative thought and is not encouraged in schools. Yet the UK’s engineering specialisms are much admired by continental Europe where engineering education is more generalist. UK engineering operates like its medical professions – with deep-seated know how but multiple interfaces. We should recognise these interfaces exist but understand that the reasons for them are well-founded. We need a way to get specialist competences knitted as a web that interacts with all.

TW: Agreed wholeheartedly.

AP: Is an institution a place or a body of people? Are they determined by education or vice versa?

‘M’: If education is delivered off the web, does that begin to change all?

AP: Certainly MOOCs (massive open online courses) are concentrating universities’ attention. The potential of educational choice could certainly be a component of change.

‘N’: Why is fragmentation bad when specialisation is good? We may even be suffering from too many generalists and insufficient specialists. By and large, specialisms are shared out between the institutions and kept in fair shape. But in Mike’s description of institutions as ‘keeping the knowledge’ and ‘keeping the list’, the latter role is a fiction; they are toothless! We need to concentrate on finding better ways of grouping specialists effectively. An Institute of the Built Environment is not the answer – it will just be another ineffectual ‘big bag’.

‘O’: Some cross- specialisation alliances work very well – like the BCO and Passivhaus, where the common ground is the subject matter.

AP: So what mechanisms would be effective? Who should own establishing the way we work? How do we persuade good people to join the right part of the profession for them?

‘P’: If a new institution owned the 21st century goals and the others were answerable to it and, via it, to Government, it could drive change.

AP: Taking an ethical, future-responsibility, role - where the built environment is held as a common asset - would require those that fund development to be

separated from those that design it. Is this where a ‘Hippocratic Oath’ might have a role to play?

‘Q’: We used to have something that did that – called the planning system! But having had a broad education as a planner, in hindsight a deeper and narrower training would have been more useful!

‘R’: Education is the key! Producing hordes of generalists may not be right. But 18 year olds know too little to make good decisions about university courses. Would a shared foundation year be the answer?

MM: Agreed. The architectural engineering syllabi at a number of universities offer just this.

AP: Our industry creates specialisms – but interaction is learnt in practice.

‘S’: People need to do something specialised to learn how to do something difficult!

‘L’: The Napoleonic Code, which still underscores continental practice, created ‘Free Professions’ where the prime duty of a professional cannot be overruled by commerce. We lost this and the primacy of societal responsibility with Thatcher.

AP: So this new institution should reassess social and legal contracts? What other practical steps are needed to get the best out of a reform process?

‘T’: There are many who trained for the wrong profession because of academic barriers to entry. For example, a good maths A-level is a prerequisite on engineering courses – but practitioners never need it again.

AP: Indeed. In fact, UCL has evidenced that, by dropping A-level maths as an entry qualification, the graduate cohort surpassed previous ones as mathematicians.

‘J’: As an engineer working in design & build, the concept of a ‘whole life’ view is a struggle to convey when least cost rules. Any process transformation must make whole life thinking central to its agenda.

‘U’: This aim must involve operational people inputting a whole life philosophy. But where do FM people go to tell the story? There is no forum for discussion of performance.

The Edge agreed to take the issue forward.