

How long will clients tolerate the educational barriers to a low carbon construction industry?

Chair - Dr Frank Duffy

Frank welcomed the delegates to this, the 42nd Edge Debate by describing the founding basis of the Edge and outlining the focus on interdisciplinary debate in the space between our traditional institutions.

Given increasingly urgent environmental challenges, educational reform for all the design professions within the construction Industry is more likely be driven by external client pressure than by the professional institutes, entrenched as they are alleged to be behind lines drawn after historic demarcation disputes. Professional territoriality may unwittingly have been made even more rigid by inappropriate academic structures. This debate was intended to test these hypotheses from the demand side, i.e. clients' current priorities – represented by Duane Passman, Lorraine Landels and Matthew Bacon – and from the supply side, i.e. viewpoint of three teachers of architecture – Robert Mull, Fionn Stevenson and Richard Parnaby. While three or even two decades ago such a discussion could have been conducted in a much gentler way, a new sense of urgency is apparent in the seriousness with which the subject now has to be addressed.

The speaker session would be followed by questions from the floor and a debate with the speakers.

The evening would end with a glass of wine kindly provided by the sponsors for the evening The Building Centre Trust.

Duane Passman

Head of Facilities Planning, Design and Development, Brighton & Sussex University Hospitals, and Visiting Professor at Salford University.

Duane explained his background and that he would speak from a demand side and client perspective (with a hospitals and NHS focus)

In answering the proposition, Duane suggested the answer as "No longer will client tolerate this".

Duane is currently the client representative for the development of an NHS site in Brighton. Given that Brighton has the UK's first Green Party MP the sustainable agenda informs the development in Brighton.

The project will attract Public funding and (hopefully) not PFI.

Major design players have been appointed (due to scale and capability) drawn from a wide number of practices. A contractor has also been selected.

Duane interfaces with the core consultants' team on an almost daily basis. However teams augment their contribution with a "sustainability" specialist(s) who intervene in the process and team on an intermittent basis.

Why do we need this as a specialism?

But at a time when we collectively hold the future of the planet in our hands.....the designers need to treat sustainability directly as a core skill.

Duane, trained as an astro-physicist, recognised that planners move on a glacial (time) scale but we cant wait that long for sustainable design capability.

Duane argued that what we need is for zero and low carbon understanding to be completely intertwined into the design and construction team, including the clients.

As a client Duane acknowledged that he has no formal qualifications in the Built Environment project process.

One of Duane's others reflections is that because of that experience the degree of pull he has to exert on the design team to address key issues BIM, LZC etc is inordinately high.

So education (in sustainability) is needed by all players so that it is integrated not wheeled out as a silo once every couple of months.

Duane's view would be that as we move more and more to integrated design processes like BIM and off-site technologies, we need a new breed of designer.

The final question from Duane was "should the client be much more informed" ?

Lorraine Landels

Director of Strategic Relationships at Buro Happold.

Lorraine explained her role and that she and colleagues at BH usually interface directly with clients at problem definition stage.

The client base is end user, developer, and owner occupiers. They have a dynamic focus on the client - and a new type of designer is needed for this.

Lorraine has worked on research papers for this debate with Adam Poole (a member of the Edge) and had drawn some conclusions but had modified these with some last minute thinking.

In current practice Universities respond to and follow the professions not what clients need.

Designers ignore (or are unaware of ?) what drives the clients.

Lorraine outlined three examples which should inspire the need to address our approach to education and training of architects (and designers?):

- BH have worked on a new school of architecture in Russia - set up to look at major issues that Russian society is faced with. The whole premise of the course is to look at what the society is facing. Cities need to be developed to avoid short term redundancy as the industrial base of economic activity changes. In viewing the first year's work of the Russian School it is progressive and provocative - design is following social drivers from a community perspective
- BH have also been engaged to help develop primary education system in Syria (for the First Lady) - this has needed BH to help restructure the education system before being able to design the facilities. The teams are asking "what does society need" and then building the communities to address that. Three quarters of the effort is socially focused.
- BH have been approached independently by three Chinese clients who have each asked for support to help set up educational facilities at the boundary

between Chinese structures and Western practice. Where is our thinking on this global market place perspective.

Lorraine questioned whether there should be a new role Education of architects?

Matthew Bacon

Architect partner at Eleven Informatics and visiting Professor at Salford University (formerly part of the BAA client team).

Matthew comes to this debate having spent 18 months thinking about the future of the architectural profession - in his role as Visiting Professor at Salford where they are setting up a new programme.

Matthew suggested that if he were to pick a single aspect of his career which stands out it would be spending month in Japan (on behalf of BAA) studying industrial practices. He learned the power of dreams leading to visions.

These visions can only come out of thorough research.

What is fundamentally missing from our Low & Zero Carbon agenda is the dream - how will we bring this complex jigsaw together?

And when? We need to do it by 9 tonight, but if that is not possible then certainly by 2013 when the Carbon reduction commitment kicks in - CRC is a big challenge and commercial realities will drive it.

The industry as a whole is ill-prepared for this challenge - all of it [is un-prepared] but none more so than the architects.

In the symposium led by Matthew for Salford they reflected on the needs of industry, as much as the opportunities for new practices and new processes. Offsite construction, and a sustainable future, where the focus of our efforts have to be on refurbishment to address low carbon performance of existing buildings.

Matthew felt that the frustration of architectural schools mirrors the frustration and lack of funding in engineering.

Our profession does not share knowledge well, being resistant to change, and withdrawing into a design focused ghetto. We have no track record of research - notably less than 25% of schools achieved 4* (or better) research accreditation in latest Research Assessment Exercise (RAE).

All sorts of other professions are sitting on the seat of the architect to deliver low and zero carbon objectives. We will never achieve these objectives without changing;

Amongst other things, the recent IGT report identifies a lack of commitment to collaboration in our industry.

The R A E (?) report argues for a fundamental change to the design process - but where is the body of research in our schools into the processes required to address low carbon?

The RIBA Plan of Work is outmoded and not fit for purpose in a low carbon world.

Our codes encourage over design and waste - where is the research to support a rationalisation of design assumptions?

Where is the (buildings) in-use research data to inform our design processes?

Where is the science behind in-use data generated for post occupancy feedback - there is too much "soft" touchy-feely stuff only. Where is the hard data on this?

Which professions can profess to be scientific experts without the hard evidence to back that position up?

So - how long will clients tolerate the educational barriers to a low carbon construction industry? Time is running out. Practices must engage with Schools to drive this change, Clients also have a responsibility to do this.

Can we afford not to invest in New Knowledge for Low Carbon.

Prof Robert Mull

Dean of Architecture and Spatial Design, London Metropolitan University.

Robert suggested that it seems from the Demand side speakers that "Education is at fault"? He went on to describe "What do we do and how do we do it in my faculty".

The faculty aims to teach basic tools and processes which students need to practice.

There is a need to re calibrate and fine tune the delivery to reflect changes in students' value systems

The concept of "Duty of care" informs or should inform all that we do. We use this as a test in all that we do.

Currently value systems (in industry?) concentrate on professional conversations which are conducted between discipline experts without connecting to the uninformed users.

Student value systems are informed by an overwhelming concern about climate change and their belief that they have responsibilities as citizens and professionals to address this as the key issue.

The faculty encourages students to engage with local communities, schools, etc to test their motives, ethics and skills in the context of a dialogue with real users.

Engagement with global areas of rapid change and scarce resources in emerging economies causes students to re-think their approaches.

In terms of research the faculty are looking at how experience can inform what it is that they deliver.

There is terrific pressure in architectural schools in terms of HE funding and the general austerity measures - but they can see incredibly positive things in this. A lack of public funding will push education back to part time studies and work place based learning, which pushes us into a new paradigm.

The role of the profession needs to work with schools to re-assess the debate between architects and designers.

Lack of educational funding will drive us to re-think forms of practice and new forms of association

Frank Duffy, as chair acknowledged that demand (for change) can be led from Students, but what about top down influence?

Robert answered that - they place the project work at the centre of teaching across the disciplines within the university.

Dr Fionn Stevenson

Reader in Sustainable Design at Oxford Brookes University.

Fionn sought to re-frame the debate by focusing on society, building upon experience of action based research in Russia looking at social drivers.

She suggested that the anthropocentric debate was not whole issue.

The language in RIBA specifications of architectural education (?) has changed and requirements have become narrower and more woolly.

We live in two worlds:

- articulated knowledge through science
- tacit knowledge through the arts

We have two types of architecture schools - with a few hybrids spanning the divide.

Do we need architects? Do we need this diversity? Should Part One be the basics and focus specialisms on Part Two?

Fionn suggested that she doesn't think we need a new typology of "archi-engs" or the like.

Requirements of RIBA quality standards etc are for knowledge coupled with both understanding and evaluation.

Where is assessment and evidence based design in the specifications? There is no requirement (for this) in the technology side.

Even climate change criteria need to be clear: the

anthropocentric basis is about protecting people from the (changed) climate (ref EU 9)

but there is no focus on climate mitigation!

Need to move to evidence based design.

Fionn felt that she is more pessimistic than Robert - the prevailing mind set is that architects are trained to vision, with the fundamental believe that they know better. Individualism triumphs but is a major barrier to addressing collaboration.

Educationally schools struggle to evaluate group work - again the focus on the individual triumphs.

Credentials for addressing this is that Oxford Brooks convened a special interest group looking at sustainable design in architecture - 10 years ago - so have been doing this for a while. Three 3 years ago they had another conference across the schools to challenge what they are doing to address the carbon agenda. Challenged to address "Designs on the Planet" - only Brooks presented a review - others focused on bringing new ideas forward.

Acting as the cuckoo in the nest, Fionn suggested that the challenge was to work against ill-defined educational criteria from RIBA and EU in de carbonising designers - using benchmarks critically to get students to challenge their own standpoint, with a module on POE, and evidence based performance evaluation in second year.

Oxford Brooks link evidence based work with visioning base - specialism in Part two could focus on performance based design. Schools are (in fact) encouraged to develop distinctive interpretations against the RIBA/EU specs.

We see carbon specialism as being needed - all students cannot all be experts in everything.

This (debate) feels like groundhog day for architects - the changing identity of the architect needs to be picked up by schools.

Its about skills and knowledge. It need needs to embrace interdisciplinary working - not just with engineers but also embracing ecologist etc.

We need planet focused design not just people focus.

Ultimately Fionn expressed optimism that we will see timely development of new approaches to architectural education.

Professor Richard Parnaby

Professor of Architecture at the University of the West of England.

Rather than respond to the challenges raised by other speakers Richard sought to develop the story about what they have done at UWE.

Professional silos are not what we need. Twenty years ago UWE looked at setting up a new architecture course - embracing surveying, planning. They wanted to recreate a joint planning and architecture degree programme, addressing the criteria needed to enable responsive development.

Student values have changed -not many students want to do planning - they tend to see it as architecture but perspectives do change during the course. They call it architecture and environmental engineering - but need a snappier course title to attract students. The importance of numbers and evaluation should not be missed.

Richard described three different ways of developing joint course programmes:

- joint validation of 4 year courses - effectively boiling 6 academic years into 4
- joint teaching - modules are delivered cross-disciplinary
- working in (interdisciplinary) project groups- student resist this because of their focus on individualism. Struggle to get them to work on less mundane projects.

There is a debate to be had on content of courses - individual creativity cannot dominate the need to work on collaboration.

The 19 century framework (of professional institutions) is not what we need.

Questions

Frank Duffy invited questions from the floor - which developed into a debate where the core speakers were able to respond to questions or statements made from the floor.

What follows is a best-efforts attempt to capture the substance of the debate with minimal editorial input. The Debate is reported here under the Chatham House Rule where content is reported unattributed.

A

Work (as an engineer) for clients but work with architects.

Buildings in use - most clients don't reward teams who look at performance in use. Most developers won't fund POE.

Hence (without feedback) every project is a prototype.

Owner occupiers do want POE.

(Unfortunately) the mind set of lots of procurement is cost averse - no reward for inventiveness.

B

There is evidence that this (demand for POE) is changing in some sectors but much depends on how the proposition is 'sold' to the client.

Commercial clients realise they have a static portfolio and realise they need to assess putting greater value on POE to unlock their existing portfolio.

C

Domestic "soft landings" show some promise - but what is the reward? (We need a market demand?)

B

There is evidence of springboarding investment into Low and Zero Carbon solutions.

A

Functionality issue would be helped if the people who measure efficacy (of systems and buildings) were the occupiers.

Noted that medicine already has this direct feedback from consumer to professional.

But in the Built Environment sector projects are appraised by other designers (with professional bias) not by occupiers and users.

Can we involve occupiers to lead POE

D

New Build only small % (of carbon) therefore Refurbishment sector will grow.

But we need a bigger picture of the opportunities (for low carbon markets)

E

As a surveyor who dabbled with design on a masters programme - I like the whole idea of re framing the designer.

Designer assesses value and worth.

Surveyors do not do this well.

So - how does that process of integration bind in assessing value?

Architectural education fails to focus on de-constructing the brief- critical evaluation is needed but designers want to focus on design not asking questions of the client - re-framing the brief (would be a good place to start)

Educational process has to be client and designer together.

B

Not captured !

F

Why is it only architects in the dock?

There needs to be an understanding of society as a whole.

We should talk about kWh in primary school making (the simple science of) sustainability part of general education.

As an exemplar - doctors may be specialist in circulation system but we all know what a vein is.

B

Buro Happold's Cuban experience (like Syria) are more integrated (holistic ?)- materials are re-used and re-used inventively and repeatedly.

Quality of schooling is astounding without ICT (and other)resources

But in this country we don't deliver anywhere near these outcomes.

G

The students sense of responsibility and duty of care (is laudable) - but how can we assess architect students in order to inform design decisions?

We carried out an 18month project in Nottingham - to determine how can we frame curriculum to embrace sustainability . This will be published end of next week - framework for curriculum development

At Nottingham we are trying to define learning outcomes within the woolyness of RIBA criteria.

Students are expected to identify and compare, and skillfully assess sustainability issues and use these to inform design decisions.

(G) made another allusion to where the Medicine sector leads in curriculum development.

H

There has been a fantastic response from supply side but - we are at an extraordinary turning point.

The arrival of BREEAM, Part L etc has driven change in last few years. But recent evidence indicates a lack of urgency - for example the zero carbon task force for schools is being ignored (in Gov't, Civil Service,DH).

There is evidence that change for the worse is happening in the real (cash strapped) world - despite early optimism.

Students from schools have a better grasp of environment interests but have we had a peak in this and is it waning. Environmental issues have dropped down the agenda: in this government and in this recession

J

Comment on the issue of specialism: working in Germany was responsible for design and the costing of my designs, but we in UK run the risk of increasing fragmentation.

Having had a polytechnic education I understand the issues of working as a technician vs working as a professional.

In the UK to achieve CEng we need to have done 6 months on site. Perhaps in the new era we should do 6 months running and operating a built asset to achieve CEng.

K

Start by agreeing with Richard on the criteria - to focus on skills not on inputs

Criteria are written to encourage diversity

Yes we need to embrace evidence based design - Professor McKay ("Energy without Hot Air") provides an excellent account of the evidence.

Yes we made awards to individuals in recognition of their personal contributions to architecture.

We must not think that science is too complex - we have to do that (the basic building science ?) as architects.

Recession is not good for doing different things - the reality is that its the developers who are living in a tough world.

We will still need regulation balanced with market forces (to force sustainable change)

D

Does architecture still shy away from specialisation?

K

Yes - RIBA doesn't set the curriculum - it validates what they (the educators) do is what they say they will do.

L

Background is one of a commissioning engineer - this does provide the evidence base through feedback notes (we did that at Arups for 30 years).

Comment on carbon counting - carbon is a new educational thing. As an engineer we have also designed systems for maximum efficiency - the physics is well understood.

The thermostat (in this room) does not have a mind of its own - its physics that brings the fan on to deal with the hot air in this room"

Its efficiency in use that counts.

C

RIBA criteria is woolly - need to have criteria split into the specialisms.

it is not just about efficiency since we need to address embodied carbon - bit pessimistic about this because it has yet to feature in sustainability analysis/practice.

L

There is progress on material selection based on embodied energy etc - and as an (engineering) industry we did respond to the ozone hole by avoiding CFC refrigerants and aerosols. (we can take collective action in the face of environmental catastrophe).

B

Where is knowledge kept?

M

Have looked at POE for too long - and we have had open loops for too long.

Its all been "market driven" and its all about outsourcing (like BRE) and we have been re-thinking construction not re-thinking performance.

What should we do - NOW?

New buildings use 3 x design energy forecast - but we are all in denial. There is no evidence based regulation.

A common fault with projects is "it should have been simpler" - complex control regimes simply don't work.

Three things to do:

1 have a vision - this cant go on

2 education focused on outcomes

3 define the professional job which needs doing (in the face of politicians (of whatever colour) who think its elitist or anti-competitive.

Professionals have to engage with outcomes!

N

Agrees with Bill - but we have failed. Natural reaction is to have automatic controls in place (which end up being too complex for users).

We (you designers?) don't understand the use of buildings - in the design phase. Too often hear the phrase "this building is never being used in the way it was designed to be used" (ignorance of buildings in-use)

If we have (performance data (e.g. Arup) we must share it.

P

Medical profession has a fantastic evidence base:

Do one , see one , teach one - medics are NOT always so sure

Take evidence base to form a view and then take action on it going forward - otherwise its all rear-view mirror stuff.

Evidence based design carries risk - cf the impact on medical outcomes of the "room with a view" design philosophy. (We are unable to differentiate between the controlling and dependent variables - in terms of medical outcomes).

N

Where is the vision?

What could life be like?

And not just with a human focus.

Q

On the IDBE programme at Cambridge we are trying to bring together multidisciplinary understanding - but what should we be teaching?

L

We should have focus on efficiency not low-carbon.

R

Trained as an architect but working life has been in the energy industry.

There is recognition by many clients that the likelihood of reducing energy in buildings is a major challenge

What is interesting is how you control this - but its only 2%

We need a whole carbon focus - not just within the building but including the consequential carbon load of inputs to buildings from the grid. This would lead us to seek alternatives such as avoiding peak (electrical) loads to reduce the overall carbon load.

S

Have examined several schools of architecture - the levels of carbon literacy is extremely variable.

Fionn's vision is quite compelling - specialisations could have a huge impact on (educational) outcomes.

Designers need to define a value proposition in order to be accountable for it.

D

There has been little debate on how buildings are used over time - risk of short circuiting building performance.

E

Design studio perspective to define the value proposition - the way we did it in the design studio (IDBE ?)

Getting students to imagine their professional life over the next thirty years. How do we get these perspectives to inform what we do now? We made the students think about how THEY wanted to live which caused optimistic reflection on professional responsibilities and skills.

T

The Question assumes there are educational barriers - do clients own designs or do they own operating buildings?

Frank Duffy suggested that clients own the design of use is the thing.

Hywel - are clients concerned about the design or about the (business) outputs they get from the asset?

Frank Duffy suggested that we don't have enough angry clients!

P

I am "testy" as a client (not angry?)

I define what I want but don't like the uninformed criticism of the uninformed (cited CABE, Planners etc)

I own the design - which I need to get the cash allocation to fund the development.

I also own the building in use.

Have been asking questions on whether we can model the design as if it was in-use - to check its performance.

Matthew Bacon declared that he has been engaged in modelling and anticipating how Duanne's building is planned to be used.

C

Expressed concern about the reliance on modelling. How does the modelling feed into education - are we mirroring reality in schools (can we)?

U

Closeness of professions and education - the practice is becoming more specialist.

Has the gap grown between education and practice?

A

Appreciating Duane's determination as an expert client to get 'the design he's briefed', there are still many briefs that need to be questioned and corrected by the consultants. Clients do need the advice of the well informed consultant.

V

In a bit of a log jam - but committed to giving the students the bravery to challenge the brief and to question the solutions.

Give student the sensibility that they are agents (of the client?)

M

How do we engage people on POE?

We went to designers, went to client and to government, - none was interested. Generally only one-off clients were engaged (because this was a once in a lifetime investment) - so we have an open loop again.

Change will only happen through building professions embracing POE. Increasing complexity is not inevitable - we can design simple and robust buildings.

C

Have a false dichotomy developing:

in Part One we can hold that vision, but the centre (of the curriculum) needs more work than specialisms. Look at nature - we need specialists talking to each other using a common language.

D

Problem is that we are becoming "enthusiasts" and we run the risk of losing the plot.

Frank Duffy - Chair's summary

Not everything is wrong in the world of practice. Successful and creative collaboration is possible. Particularly at the early stages of projects professionals from various design disciplines do appreciate the importance of intelligent and open-ended collaboration. There are obviously outstanding teachers of design who understand the necessity of equally open ended approaches. But are these successes proportionate to the scale and urgency of the environmental challenge that we all face today? Two overriding questions addressed that underpin this debate remain to be resolved, "Are such initiatives enough?" and "How long have professionals and academics got before we realise that we may have been too late?"

The ultimate client, after all, is mankind. If design professionals don't address the challenges addressed in this debate in time and if academics leave it too late, the post occupancy evaluation of Planet Earth really will have to be conducted by the Archangel Gabriel.

Closing Comments from Andrew Scoones of the Building Centre Trust.

Trustee of Building Centre Trust. Son is an architect and daughter in law - is a well known head of an architectural schools. Value the fact that my son has carpenter, plumber, (and other) craft skills to make a go of a listed building.

Young people today who have no experience of working with their hands - no experience in schools. The Building Centre Trust are concerned that hand skills and knowledge of materials has been omitted from schools, and are seeking ways to re-invigorate this back into the secondary curriculum.

What will young people be doing in the future (if they have no craft skills)?