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## Delivering green design

13 May, 2014

A full transcript of the AJ's Green Sky Thinking event held at the O'Donnell & Tuomey-designed Saw Swee Hock Student Centre at the LSE

### Julian Robinson, LSE director of estates

#### The LSE's sustainability journey

Before appointing an architect, a client must be clear on what they consider to be a sustainable building. In 2005 I arrived to project manage the LSE's New Academic Building, the retrofit of an Edwardian building on Lincoln's Inn Fields by Grimshaw Architects. The brief called for 'the highest standards of life cycle maintenance, access, energy efficiency and sustainability.' But what did this mean? There were no targets, measurables or details, and most importantly no contractual commitments.

I persuaded the LSE to include a contractual commitment of BREEAM Very Good with a target of Excellent, which we achieved. Yet my heart sank when I went round the completed building and found a DEC rating of E. So I made the brief for this building [the Saw Swee Hock Student Centre] contain a contractual requirement for BREEAM Excellent (with a target of Outstanding) and an EPC/DEC A rating.

We don't just appoint an architect, we appoint a team

#### Appointing an architect

At the LSE, we don't just appoint an architect, we appoint a team. We don't pick an architect who has a track record in sustainability because it is too limiting. The architect is the lead consultant and we ask them to assemble their team. We then look at the design consultants they have allied themselves with and how they work together as a team. Through the interview and pre-appointment design workshops, we ensure that the architect understands the global and our local sustainability agenda and has the design capability to respond to them. and most importantly that they understand you and you can work with them.

Sustainability starts with the first brush or pen stroke. It's not something you can add on. We held a series of design workshops where we teased out of the design teams how they would address sustainability.

#### Six tips for holding onto sustainability throughout the project

- Select a sustainability champion for the project who is officially appointed; I got the project board for the Students' Centre to appoint me.
- Establish regular project reporting which must include a specific and separate item on sustainability.
- Make sustainability targets a contractual requirement for consultants and contractors.
- Allow sensible budgetary provision. BREEAM Outstanding costs more.
- Watch out for 'value engineering' and respecification by the contractor which can have both overt and covert negative impacts on sustainability.
- Involve the building users throughout the whole project and get them to understand the implications of adopting a sustainability agenda.



*O'Donnell & Tuomey's Saw Swee Hock Student Centre at the London School of Economics*

## Alan Shingler, partner, Sheppard Robson

### Embedding sustainability in a large practice

I will talk about how we have embedded sustainability across our practice which currently numbers 260 people across four locations: London, Manchester, Glasgow and Abu Dhabi. My focus will be on three time periods: 2000 when our group started, 2007 when the zero carbon agenda emerged, and where we are now.

One of the biggest sustainability challenges for a practice such as Sheppard Robson is the fact that we are a fourth generation practice. We don't have a single leader who founded the practice and passionately believes in sustainability or a defined language.

Our sustainability group, SREvolution, was founded in 2000. It wasn't born by the partners; it was a staff movement that got together in the evenings over a beer. That culminated in a presentation to partners who then bought into its importance. The next step was to become ISO 1400 and 9001-accredited. I believe we were the second practice to do so. This meant that we had to embed sustainability as part of the design process into every project and everybody at every level needed to buy into it.

### An inhouse sustainability matrix

We set up we call our Matrix tool in 2000. At the time we were working on Arup's headquarters in Fitzrovia where we used their SPeAR assessment which they had launched about the same time. SPeAR was effectively an Excel spreadsheet, similar to BREEAM which was meant to be a holistic approach to sustainability. Thanks to that project that we were able to develop our own matrix tool.

The purpose of the matrix was to give guidance. It was a tool for architects in our office to ask questions and to prompt them at appropriate times of the design process. We appointed 'matrix guardians.' We ensured that every project went through a minimum of four design reviews which a member of the sustainability group sat in on, and every project had to complete a matrix assessment.

### Contractual commitments – the stick

The zero carbon agenda in 2007 was a watershed moment because it moved the debate beyond BREEAM to focus on fabric first and the passive elements of a building. It changed the focus from the spreadsheet to the building. At that time, we were working on the Lighthouse, the first Code for Sustainable Homes Level 6 house that we built at BRE. On that project we worked a lot more closely with our engineers throughout the design process because we needed to test the scheme as it was being developed. If we didn't get Code Level 6, we wouldn't meet our client brief.

There have to be contractual commitments from the client

I am a great believer in the stick. That was one of the things that Julian said that really rang true with me. There have to be contractual commitments or defined targets from the client, because it is very easy to peel back from that at any point in the design stage.

### Environmental modeling: BIM, Seraira and Ecotect

Now in 2014, I'm seeing another significant shift. We are no longer focusing our design process around the BREEAM framework of the social, economic and environmental tick boxing. We are increasingly interrogating our designs more using IT platforms, both BIM and design tools such as Sefaira or Ecotect. We are also starting to gain data from smart technology, such as mobile phones.

We are undertaking research with Arup at the moment about how smart technology could influence the social as well as the economic aspects of sustainability, right from the initial brief. We still focus on a holistic approach to sustainability but we are using tools which can test the scheme - it's no longer intuitive. It's a far more integrated approach - a far closer marriage between architecture and the rest of the disciplines of the design team.

Our Siemens Headquarters for Masdar in Abu Dhabi demonstrates this approach. We used parametric modeling and environmental tools to inform the architectural expression. Client ambition was key; it was a contractual obligation to achieve all of Masdar's key performance indicators, LEED Platinum, and the local Estidama tool.

The stick is critical.

Today we have much better tools and better opportunities to collaborate as a design team. Rather than relying only on intuitive responses to architecture, we can test and refine our designs with environmental modeling.



*Sheppard Robson's completed Siemens HQ in Masdar City, Abu Dhabi*

## Paul Hinkin, founder, Black Architecture

I will talk about my five key steps towards a new sustainable architecture:

1. **Getting the client right**  
We recently worked with the Catholic aid agency, CAFOD. Its philosophical position was clear from the outset. It wanted a simple humble building that trod lightly on the planet. CAFOD's genius move was that they defined the client team of three individuals with day-to-day sign off responsibility: head of finance, head of HR and head of facilities, so embedded in the client team was the triple bottom line right from the beginning.
2. **Sustainable design is a team game**  
It's not about starchitects. To deliver sustainable outcomes, the team selection is critical. I would encourage clients who are selecting a design team to visit previously completed buildings, to talk to the people in the buildings and ask them how they found that process.
3. **Avoiding the tyranny of the image**  
Clients are often seduced by fancy CGIs. If they are produced early before any design dialogue, they are at best irrelevant and at worst really dangerous. We've had projects where the client has become obsessed with a picture we might have shown them at the beginning, and that's taken a lot of undoing. So select teams on vision, values, philosophy and track record.
4. **Placing the user-centred design process**  
Look to engage with all levels of the organisation. Don't try and be definitive about the outcomes, allow the process to lead you. This approach will lead to new arrangements of buildings and facades that start to drive a new sustainable architecture.
5. **Revisiting buildings**  
We go back and see virtually all of our clients regularly and assist them through the process of optimizing the inhabitation of the building. We have yet to have any money from doing that. The real learning comes from monitoring how people occupy your building, identifying what's worked and what hasn't. We take the view that the best advert that we can have is a satisfied client in a building and that's why we do it.



*CAFOD by Black Architecture*

## **Yeoryia Manolopoulou, founding partner, AY Architects**

### **Architects cannot be sustainability experts**

I would like to start by mentioning something that Julian touched on. We don't describe ourselves as sustainability experts. We have a very integrating approach to our projects where social, economic, and environmental concerns are brought into the design process synthetically and spatially.

Inviting the architect to assume a technocratic role is a limiting approach to sustainability

Given the challenge of climate change, there is a lot of pressure on architects to become experts of green knowledge, yet information and research are moving very fast so what we need is a much more complex team and interdisciplinary approach. We bring consultants from the very beginning of the project, continually - not for reviews, but constantly reviewing the project with them. Inviting the architect to assume a technocratic role is a limiting approach to sustainability. We see our practice as being very relational between clients, users, materials and ideas.

### **Integrated passive design as a tool for sculpting building form**

At our Montpelier Community Nursery project, we focused on minimising expenditure on building equipment and services by using passive design principles. We were interested in how passive design could help us sculpt the building envelope to the advantage of spatial experience and aesthetics. We felt passive design could solve certain climatic issues in terms of environmental sustainability and it could also be beneficial to the architecture itself.

An energy-efficient and comfortable indoor climate is obtained through good choice of materials, insulation and detailing but also fundamentally through the design form of the building envelope. Room proportions and size, orientation, geometry, size and type of openings are very important factors for achieving a sustainable environment which is also beautiful and works both spatially and aesthetically.

Passive design was combined with an indepth study of the site because we wanted the site to work harmoniously with the building and with different seasons.

### **The building as a 'silent mentor' for sustainable living**

The Montpelier Nursery also works a little bit as a demonstration tool. It's a kind of silent mentor for sustainability living, encouraging better living with the environment for children and staff because of its constant and open relationship with the weather and natural



environment. The building is in a green park. The relationship with energy use and the environment is made visible to the children through continuous experience of the sky and the weather. They see how things work through visible electrical cables and connectors. They understand how the building is ventilated because we open and close windows. And they see the sedum roof. We wanted materials to become functional and be used to communicate ideas about better living with the environment.

### **Inspiring buildings are more sustainable**

In conclusion, I'd like to highlight that sustainability is often pursued in a very instrumental way and driven by a desire to solve problems mainly technological means. We need a better story to tell, which is also driven by a narrative of living, and well-being and design quality where beautiful spaces matter. By creating more inspiring buildings, people will care more for them. It's a cycle between high quality architecture and an architecture of sustainability.



*Montpelier Community Nursery by AY Architects*

## **Sarah Wigglesworth, founder, Sarah Wigglesworth Architects**

### **Keep buildings absolutely simple**

Over the years, I have come to the conclusion that I am an eco-fundamentalist. You want to get the basics right and keep it absolutely simple. You want to get the right orientation, get the thermal mass in there, makes sure it's well insulated, go for a narrow plan so that your daylighting is good, limit your glazed areas and get your shading right. Then you need to get the size of the windows right for the light, make sure they're opening so that you have fresh ventilation which is controllable by the users, make the controls simple with dials that people can understand and read, even when they're older. Use technologies that people are familiar with so that they can feel empowered to control the environment themselves.

I am getting increasingly fed up with complex kit. If it's automated and complicated like a BMS, then aftercare is a real issue and must be thought about at the outset. Automated services need to be working at a local level so they are capable of being overridden and controlled.

### **Soft Landings and aftercare**

If you flunk handover, then the building is not going to be a success

The issue of handover is absolutely massive. If you flunk that, then the building is not going to be a success, and everybody is going to be pissed off.

I am slightly skeptical of Soft Landings because it may be another one of these tick box exercises, another layer of admin and bureaucracy on the shoulders of the people who using the building. Although I agree with the ethos of it, I am increasingly fed up with matrices and tickboxes. We need to talk to people and show them what aftercare entails.

I am very interested in the way buildings perform for their users. Consultants often find it difficult to predict what is going to happen so the feedback loop is essential. We need to understand where things aren't working so that predictive technologies like Ecotect can be deemed useful tools.

We need to be testing our buildings and being honest about how they work in practice: maintenance regimes, energy costs and consumption. This requires an element of honesty in our profession which I don't think really think is out there at the moment.



*Sandal Magna School by Sarah Wigglesworth Architects*

## Q&A

### On design life

**Julian Robinson [JR]:** We said in our brief we wanted the building to last for a minimum of 100 years and we were prepared to pay for materials, such as terrazzo, the oak floors, sustainable hardwoods, and obviously the concrete and the brick. University buildings are civic buildings. We should be thinking that in a hundred years time, now as we look at a great Victorian schools or hospitals, we hope that people will look at this building and cherish it in the same way.

**Alan Shingler [AS]:** What jumps out to most people when you talk about design life is durability and flexibility of use over time. We are also very cognizant of looking at climate change adaptation to ensure that the building does not become obsolete in time through the climate. We should be looking at climate predictions as we consider everything from the fundamental form of the building material specification.

A life span of 60 to 100 years is typical. One of the conundrums is that we have to design things as efficiently and cost effectively as possible. It's very easy to go down the bespoke route. You design a building that is bespoke to that building typology, whether it's residential or commercial and your ceiling heights are constrained and your glazing matches that bespoke use. It's very difficult to get the flexibility, the bagginess into buildings.

### On density of occupation in office buildings

**Paul Hinkin [PH]:** A lot of our clients have limited resources and they are building on expensive pieces of constrained real estate. The approach that we have often taken for clients is to work with a range of densities. That tends to drive mixed mode solutions, not fully passive, but we believe by increasing the density of occupation, you improve the social performance of the space.

If you go to a fully passive office, and we've done a tour around five or six exemplars and taken clients and shown them, what you see is that the level of occupation is incredibly low. That's not great in terms of getting the balance right. We are normally at about 8m<sup>2</sup>/person and then we create break out spaces, interactional spaces and low density flexible spaces. I challenge whether fully passive solutions are appropriate in urban areas. They aren't particularly robust when you consider climate change scenarios either. I would argue for a mixed mode solution.

**AS:** When we did the move for the BBC up to Salford, the term was 'more choice, less space.' The building is quite densely occupied as a space but there is a variety of work space.

**PH:** We benchmarked CAFOD against the Woodland Trust building. We're obsessed with the wrong figures. Again it's taking on board that notion of user-centred design. Users don't perceive the built environment in square metre boxes. We did a free building study on the cheap, but there is a much bigger piece of work to be done around that.

### On environmental modeling

**Rory Bergin, partner, HTA [RB]:** I'm interested in the comment about the authority of the architect. There is an opportunity in all of this for us to take more control. There are scores of very talented young people coming out of the Bartlett and the AA and other universities here and abroad who are trained very well both in architecture and in environmental design. They have the skills, the ability to use the software, they have the ability to model many different conditions. They may be naïve, but working with you or other experienced architects, they can produce very good results. I would just put it to you that this is the future of this type of design: bring the technocratic people into your organisation and work with them, educate them to understand the passive side of things. And let them educate you, too, in terms of what they can do with modeling tools.

I'm sitting here in this rather beautiful building on the sixth floor with what should be a good view and there is no view, with what should be good daylight and there is no daylight. Nobody looked at this, nobody modelled this, or if they did, it was ignored.

**JR:** We did model it, we modelled the whole building. Most of the light comes in from the north side. There was a balance to be struck between the architecture and the environmental engineering.

You have got some wonderful views out of some of these odd shaped windows. In terms of the lighting, when the sun is shining in the future, we are more concerned about solar gain and the heating up of London as a heat island, than we are about looking at heating. That is why we planned it in this way. I wouldn't say that every piece of the service engineers advice was taken on board, but most of them were. We wouldn't have achieved BREEAM Outstanding if we hadn't taken the advice of a services engineer.

### On teaching sustainable design

**Hattie Hartman, AJ sustainability editor [HH]:** To Sarah and Yeoriah who are both teaching: How do you perceive what is going on in architectural schools in terms of equipping students with a holistic understanding of passive design?

**Sarah Wigglesworth [SW]:** I don't have much contact with other schools, but I know that in Sheffield, I am a little bit shocked at how unembedded green thinking is. I am probably being disloyal in saying that. I wish I could say that everybody is aware of it and that it is the bedrock upon which we build the foundations of an education but actually I'm not really sure that is true.

I would go back to Paul's remark about the tyranny of the image. Students are struggling with all sorts of problems. The tyranny of the image is very powerful.

The idea that you can solve all your problems by sticking a load of kit on the outside of the buildings still prevails.

Really thinking about the implications of green building on form and design is the most interesting, exciting and challenging opportunity that we are given. It is unfathomable that people don't see that.

Hopefully we'll get to a point where green design is just so embedded that we don't even have to talk about it any more, but I don't think we are there yet. Schools do have an enormous amount to contribute to that conversation and I wish they were doing it a little bit more.

That is what is so fantastic about this building - it shows what is possible with a great design team.

**Yeoryia Manalopoulou [YM]:** Design thinking and green thinking are not integrated yet. Schools of architecture have a lot of work to do to achieve this. What I observe is more and more a separation because of the desire to specialize. This happens in everything. Research councils announce research grants that are very specific, related to energy or sustainability. So universities respond by creating a new institute of energy resources, or a new course on climate change or environmental design. All of that is not integrated.

And this is true of the RIBA as well. Our awards are separate. They have a sustainability award, a design award. In our incentives, research and awards, sustainability is a separate issue. Universities are in this trap as well.

**PH:** Bath gets it absolutely right. They teach engineers and architects jointly in the school, they do joint project work. There is a notion of teamwork that is embedded right the way through the process. There are professors of architecture who are both structural and M&E engineers and there is a process of embedding social and economic and environmental thinking at a basic level within the teaching throughout that first degree. It's about philosophy and culture and the good schools do it well, and the bad schools pay lip service and don't do it at all.

### On competitions and the tyranny of the image

**Anna Woodeson, Wilkinson Eyre [AW]:** Much of our work is won through competition with amazing images. Clients need to realise that they will get a better scheme if they get an approach. They see a team jelling, and they get an idea of the approach to say Stage B, but they don't see an image. We often do both visualisations and models. How can we break that cycle?

**PH:** It's a media tyranny as well. The media wants to publish iconic images as well, whether it's a completed building or at design stage. So the whole process is driven around an empty vacuous image. We need a campaign for real architecture.

**AS:** I am a RIBA councillor. Part of my time in office has focused on RIBA awards and sustainability. The RIBA has lifted its game. It's changed the standards you need to meet, and we now have sustainability experts that review all of the submissions. There is more work that needs to be done, certainly in terms of post-occupancy. The RIBA has spoken about a 'test of time' award. Whether that happens or not, we shall see.

I agree with the issue of the tyranny of the image but we also need to be cognizant that we are in a design industry. People are buying the image as well as they are buying the performance of the image. Buildings can be sustainable and beautiful.

We've got to do both.

### On BREEAM and LEED

**JR:** We all accept that there is a problem with BREEAM and LEED. That's why we've combined it with the requirements for the EPC and the DEC. But it's quite difficult for clients, particularly unsophisticated clients. They need something like BREEAM; it is some sort of measurement even though we know it's got flaws. It's all we've got at the moment.

Now we also have BREEAM In-Use and this building will go through BREEAM In-Use. It's all very well getting the certificate up front, but we need to operate this building to show that we are following through with that commitment.