

07: Unified design: from multidisciplinary to pan-disciplinary thinking

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My position is very different from a number of the other Symposium speakers in the sense that I have never been brave enough to set up my own practice. I joined Arup Associates in the late Eighties. I was attracted to it because of something very simple, not necessarily the work that it did at that time, but rather the idea of a laboratory where people came together consciously in a group, with shared ambitions, to work collaboratively, to constantly challenge each other, and not in the orthodox way of a design studio. Frighteningly enough, Ove created the practice the year that I was born, in 1963, and as I look into the second row I see Mr Sugden who was one of the founding fathers. This paper is about how practices evolve, about the ways guardians of a practice transfer knowledge and react at different times, and about the different generations with which that practice is engaged, until we have the decades and the legacy of Arup Associates' work. Of course the work that it undertook in the Sixties was very different from the work it has evolved through the Seventies, Eighties, Nineties. In this respect, this paper develops a theme of others at this Symposium, that is, designers being reactive, the notion of designers actually recognising that each opportunity is unique. Self-similarity works at a local scale in terms of project sense but also at a generational level; people are attracted to work in a group that is about collaboration.

We are at a threshold now of overwhelming change, whether it be the demographics of our society that we are having to relate to, whether it be climate change, issues of energy, waste. We are now at a transformatory stage and we are bombarded as designers in terms of reacting to and responding to all this change. I think there is a genuine danger; one of the patterns I want to describe is simplification, to recognise complexity but also recognise the simple things and the priorities that we should have as design studios.

As for the times we are in, are we as a design community, not necessarily Arup Associates but beyond that, really prepared for the change that is about to take place? Are we responding quickly enough? Have we got our priorities right in terms of the people that we serve in the communities? Some observers think not, some observers think we are in crisis, some observers actually think we have become fundamentally disconnected from societies and people. Sean Griffiths' office has actually adopted an incredibly sophisticated but still humble issue about prioritising the people that they are working with and putting that at the forefront, beyond any sort of notion of aesthetic sensibilities. I think it is a reminder that the anathema of a signature style which seems to be the route map to stardom and the route map to acceptance in the hierarchical stages of architecture is really just an anathema about what we have all discussed this morning, which is that each opportunity is unique, each place is very different.

people who commission a building, those who inhabit the building, those who are affected by it on the outside.

It really makes my head ache when I think about things like that, because you get utterly depressed about the complexity of the world that we work in, and what the patterns are that might give us clues to have successes and to create environments that actually have a positive and enhancing effect on people.

I would like to dwell a little bit upon a studio that obviously is made up of individuals but also works as a group and works as teams, and the dynamic that takes place between the individual and the notion of collaboration. Leon van Schaik and others have touched upon this spatial intelligence and we are all, from whatever personal journey we are on, influenced by a notion of our experience. As Sean Griffith takes great pride in reminding everybody, he is from Liverpool and I am from Birmingham, which is in the industrial heartlands of the North. My personal experience, my personal journey is very, very different from Piers Gough. I rely on my senses as the only communicative technique I have got to absorb the outside world, and it is actually my experiences of the world – the people I have met, the family I grew up in, the place where I was born, the places I visited, the experiences I have had – that then condition and interpret how I actually perceive the outside world and gives us this unique individual spatial intelligence.

One of the patterns that we are looking to invite in our studio is the notion of looking beyond our normal boundaries, beyond our normal disciplines, really from a perspective of some humility, because really architects and engineers are clearly quite confident, arrogant individuals. We believe we have a firm view of the world. That view may be evolving and changing all the time, but no practitioner gains work through lack of confidence; they do it with a very particular view of the world that might be complex and broad.

I think there is also a humility in the notion of research because to undertake research it sort of accepts as its starting point, as *a priori* truth, that you know what you do not know, but there are other people out there who actually have something to offer and then invite, and a sense of learning from that can be an enriching experience. A lot of those things are speculative, a lot of those things do not have a dedicated end, they are really there to actually challenge the *status quo*.

Without over-intellectualising the position, we design for people, and there are now all sorts of very clever and complex definitions of what sustainability is and what our environment is. I think we should offer a view that perhaps a sustainable environment is one which encourages or optimises or promotes the opportunity as best it can for the individuals to reach their potential, whatever that may be.

So we have this sort of very simplistic culture that I think pervades at the moment. The idea that aesthetic is everything and there is nothing that underlies that. If you relate this to other disciplines such as poetry, the work of Seamus Heaney or the novelist Alice Munro is dedicated to taking delight in the simplest thing and recognising that the major events in one's life co-exist with the minor but that they are of equal importance. The things that thrill us are of equal importance with the things that make us reflective, and they allow us to be melancholic. All these things offer the rich diversity that is important for a full life. That should be emblematic in the nature of the cities that we develop and the buildings that we do, with a bricolage of very different things which will stimulate and reflect where we are.

The studio in which we work looks to sift through for clues as to what the opportunity might be. Some of the work manifests itself in extraordinarily powerful ways, in iconic or landmark manifestations that are conspicuous and deliberately notable and which look to challenge as objects. Other work is actually very reticent and quiet and withdrawn, perhaps the infill of a missing tooth on a London square, it recognises. It looks to learn from its particular context and evolve a natural language from those circumstances. There is a community of designers and we should recognise that we have opportunities to flex our imaginations beyond the formulaic signature style.

We have reached the point now where we can almost do anything technically. We have technical excellence throughout. What do we choose to do with that, where do we start, what is it that we would like to do, what is it that we would like to instil in our architecture and in our projects that makes them relevant to people? Working on a global scale, how is it that we learn from the different countries that we are working within and with which we are interacting? How do you break down the normal barriers between designers who think they know everything and clients and the people who are going to occupy the building or be affected by it? Having the opportunity to learn from this great breadth of individuals and how that affects your arrival at the next project is incredibly stimulating.

Several questions underline what we do at Arup Associates. How can we consciously challenge the things that we do? Where do we look to learn from new disciplines, perhaps in the biological sciences and nature, by mimicry? How can we actually involve and find inspiration from a plethora of subjects? We are constantly looking to shake up the status quo of who the design team are and who the client team are.

This process of unified thinking is not about control, nor is it about perfection. It is not about saying there is only a simple solution, and that the solution is a formulaic recipe. Rather, it is really about looking at the different disciplines, with the core disciplines (the structural engineer, the environmental engineer and the architect) working alongside people from radically different disciplines – mathematicians, biologists, behavioural psychologists. All together look to sift through the clues of the site and the nature of the project that we have, and to challenge each other, without having any preconditioned formula. This speculative sifting does not guarantee any success; it is a journey into a slightly unknown arena. Through it, we see where the clues are and where things match. From that alchemy, which is very difficult to describe in the syntax of language, come clues as to what is right, what feels good, what stimulates, what challenges, what will provoke a response, what will give the work beyond just the aesthetic, a multi-layered reference that will provide some meaning, that will be robust in all the aspects and simultaneously many things all at once.

We undertake a lot of technical research. There is a sense of humility about a learning society and culture that is greedy for more knowledge and for new experiences, that recognises the evolution of things so to discover new techniques, look at new technologies, and maybe explore new solutions. What is critical is that this is always with a sense of purpose, and that is to remind ourselves that we serve people in many different ways. That has got to be the litmus test of any of the work that we do: how that is affected and how that is enhanced?

We have been involved with a multinational broadcasting organisation in London for some time. They are an organisation with seven thousand employees and we are helping them design a new campus facility effectively. This is a collaboration with

Professor David Cantor at Liverpool University, a behavioural psychologist. We do not know where this will take us but we thought it might be interesting. Rather than have designers speak to the clients first in order to understand their needs (because maybe we bring baggage that might be inappropriate), why not let somebody who has no design culture or baggage speak to the people in order to understand what are their rituals through the day, how do they interact with each other? This is a social network and we are looking to explore a social interaction mapping tool. The idea sounds incredibly serious and intellectual, but actually it is just a desire to have a better understanding, to see how that may influence the nature of the campus and how that evolves.

There is a spatialisation tool that we are developing which, again, is seeking as an experiment to deliberately remove the architects from the forefront. In this respect, we are working with behavioural psychologists in the Schools for the Future programme. We are interviewing headmasters, teachers, and pupils, all those involved with schools, to understand where their priorities are, and translating this knowledge to challenge the elements that normally make up the constituent components of the school. So they are able to create, completely unchallenged by the design at this stage, their perfect ideograms, their perfect relationships, and this uses gaming technology. They can become interactive. We would like to demystify this process and the mysticism of design, by genuinely engaging with people. A lot of clients and a lot of people involved in the commissioning and creation of a building are extraordinarily nervous about the masterful architects in their presence who, from nothing, create these strange visions. We want to look at demystifying that. What are the real challenges and what is the real nature of the environment for a school and how can that actually have a genuine effect on enhancing a learning experience?

We have a small facility for British Waterways currently on the drawing board. The site was incredibly tight, which effectively meant we had to put the cars underneath. Also, there were covenants on the land which dictated the cores and meant that there was an asymmetric relationship to the cores of the ground. The idea of a floating box was evolved from these considerations, with a series of *pilotis* – columns – linking it to the ground. What we wanted to do here was explore whether we could develop a language in which it would be difficult to tell the handprint of the architect, from the environmental engineer, from the structural engineer. The elevation is therefore a very simple veering deal structure that wraps around the outside of the building, giving a completely column-free space within. This blurring of the boundary between the disciplines creates a spatial organisation. Obviously the veer and deal literally expresses the running of the forces through space around the outside, but then we are wrapping it in timber shingles to allow the building to patinate naturally in its setting. It is a very simple, naturally ventilated building; all the control is given over to the individual to open and close their windows. It is a building in which we are looking to synthesise a language across disciplines, rather than being dictated from some formulaic aesthetic.

For a number of years, we have been working with a community in northern India and the Druk White Lotus School to evolve new facilities as a model village (illustrations 1 & 2). We go out, we send our students and designers out there, we talk, and what has come from this incredible collaboration with a local community is a self-build with local materials, local building technologies, applying some western ideas in terms of clever technology but doing it in an incredibly humble way. I cannot tell whether we designed this as Arup Associates or whether the local community designed this; it is some strange magical mixture of the two informing it. This is about

celebrating those traditions, those technologies, that then will give that sense of place where this could not have been anywhere else in the world.



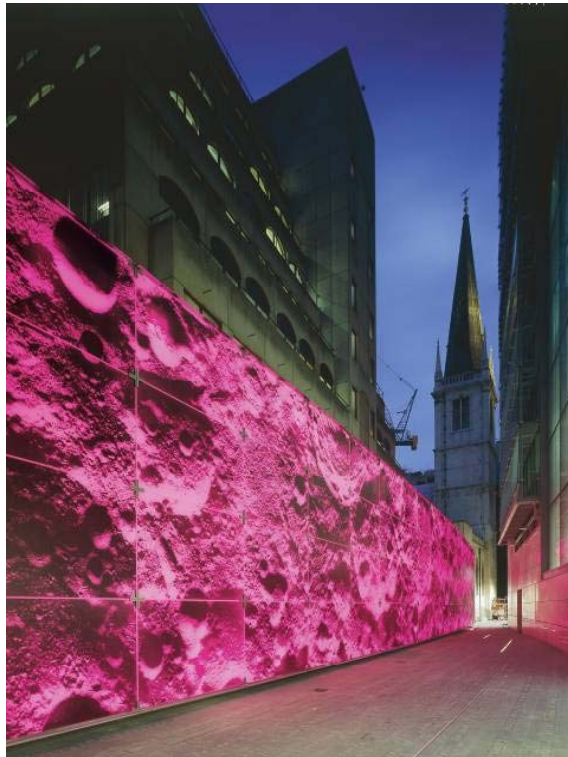
Illustration 1: Druk White Lotus School, Ladakh (Christian Richters)



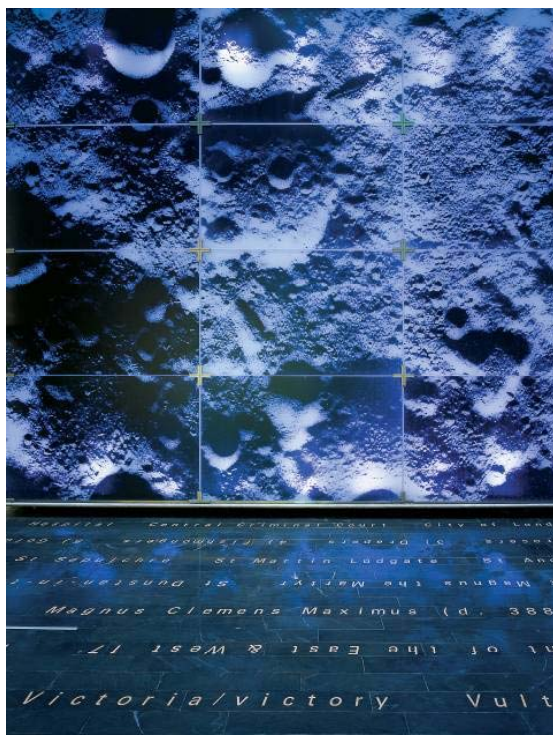
Illustration 2: Druk White Lotus School, interior (Christian Richters)

We have completed a project at Plantation Lane where we worked with the Turner Prize-winning artist Simon Patterson (illustrations 3 & 4). We actually created two sites and put in a very small-scale pedestrian intervention between the two. This sits in the city and is symptomatic or emblematic of those local, small-scale avenues and routes from the mediaeval street plan. We worked with Simon on the idea of a new pedestrian route through which we would celebrate language and visuals, and what we

have done is to take the notion of the archaeological dig which uplifted this to be one of the most important historic sites in London, and rather than making this over-complex, we have just luxuriated in the simplicity of language. There is a carpet of text which looks to celebrate the events in history and the people who have actually walked the footprints of the whole site. The illuminated screen was Simon's notion, reflecting that the one thing that has not changed from any point at all is the vision of the moon. Thus we have an illuminated screen with this ephemeral glass that constantly changes its colour over time, juxtaposed with the hand-crafted, chiselled text that celebrates people's lives and initials on the ground.



*Illustration 3: Plantation Lane
 (C. Richters)*



*Illustration 4: Plantation Lane
 (C. Richters)*

Sean Griffiths will be very familiar with the gateway into Liverpool (illustration 5). It was a competition-winning entry – an invited competition – for a new gateway into Liverpool at the M62 junction as it crashes through the outer suburbs of the city. Again, we have worked with people outside our normal discipline. In fact, we have looked to actually have people challenge, and again Simon Patterson worked with us. The idea is about ‘gateway’ and the notions of transformation and revolution and evolution. We considered how to celebrate traditional cultures of industrial engineering but also look at putting that in the 21st century and how we might celebrate transformatory materials from the physical to the ephemeral in terms of the rocket, because ‘the rocket’ is the local colloquial name given to this junction. I think this is because there is a pub there called The Rocket on account of being some eighteen miles away from the rocket trials that were taking place in the nineteenth century.



Illustration 5: 'Rocket Junction', Liverpool (Arup Associates)

We have also worked on speculative office development projects in London. The drivers for innovation and research are very limited in these projects. We accepted the commission because we wanted to look at the use of glass and how that may reinvent itself in a twenty-first century way. We worked with a Polish architect called Anthony Milewski and the idea is that we will actually use the building physicists to describe how to tilt and turn the glass in orientation so we minimise the solar gain. What we have actually then looked to do is a polychromatic piece of glass that takes its inspiration from the way that the Old Masters used base colours and a layering of veneers to create something that shimmers and changes with the environment and shadows and sun orientation. It is really looking at a poetic sensibility and marrying that with very tight constraints and seeing is it possible to use glass as the nirvana that many architects hope for, this immateriality that potentially it actually contains.

In a competition for Wuhan we have used the simple ideas of parametric design and genetic algorithms (illustration 6). We have some clever mathematicians who informed us how, for acoustic halls, to optimise the acoustic experience inside and then wrap that within a simple environmental envelope that responds locally. This consists of two very simple timber structures with an inner auditorium that is informed by a notion of building physics, sightlines and acoustics, and is really trying to optimise the experiential dimension to the visit. Outside we are looking at controlling sun and solar glare and the space in between is where people move around.

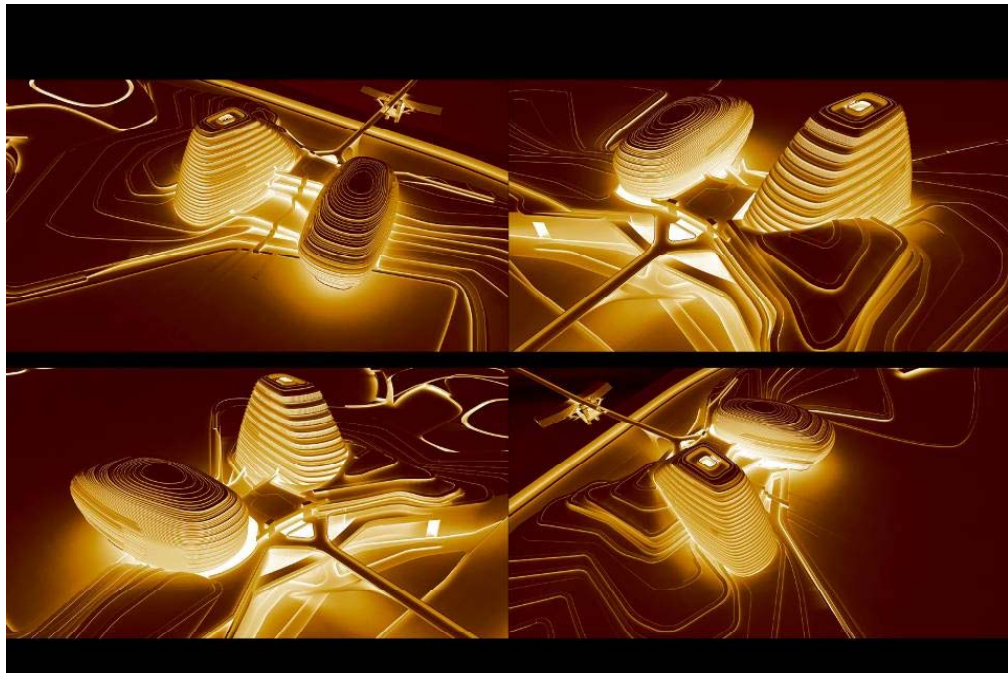


Illustration 6: Wuban Cultural Centre (Arup Associates)

As I said, as a design studio we are not static. We are guardians of the idea of collaboration and looking to how that may expand into the future, beyond where it started in the early Sixties with the core disciplines but inviting influence from all sorts of other skills. As we move from where we are now we are inviting all sorts of virtual and real collaborations with mathematicians, human scientists, biometrics, ecologists, behavioural psychologists. I suggest that in a humble sense this may be a way for us to move forward as an overall community where we can look to align specialists who become involved and who challenge the conditions and the conventions in which we work in order to move forward, so that we can deliver appropriate and inspiring environments for people.