

## The state of designing the ability to sustain

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The aim here is to ask and answer questions on the sustaining ability of architecture. The point of view that poses and engages these questions is that of the EcoDesign Foundation, an organisation that the last decade has been pathfinding ways to think and work on design. In so doing it has learnt a great deal, had some failures, a number of significant successes, been criticised, celebrated and exercised influence.

In presenting a brief review of ‘the state of the art of sustainable architecture’ a position of absolute bias will be adopted. No matter what the architecture looks like, who it’s for or its purpose, unless it is making a contribution to the ability to sustain biophysical, social and symbolic inter-dependent conditions, it is now classifiable as ‘bad architecture’. This implies that a great deal of the architecture around us is ‘bad’. The problem is much greater than this, however — because of the massive disjuncture between the architectural fabric of the material world and the limited degree to which it is actually authored by architects. These are matters of power, responsibility and affect to which we will return later.

### A Context

Confronting environmental problems, and taking action in response them, recedes back into the ancient worlds of both the east and the west. For instance, Aristotle enunciated a very clear understanding of designing with solar principles that are now key elements of ‘passive design.’

the ways we currently explore the unsustainable have emerged out of the modern environmental movement of the 1960s and 70s.

Looking to the present, a modern technocratic environmental architecture actually arrived before environmentalism — Buckminster Fuller is a significant here. From the late 1920s he was attempting to bring together an understanding of the ecological and an architecture predicated on engineered efficiency. His ‘The Air Ocean World Town Plan’ of 1927 registered the beginnings of a way of thinking that was to make him a ‘guru’ of alternative technology and architecture by the 1960s.<sup>1</sup> He actually designed the iconic object of this period, the geodesic dome, in the early 1950s and patented it in 1954.

The ‘sustainable’ architecture of the present has its genesis in three moments: the arrival of alternative technology and environmentalism in the 1960s; the oil crisis of the 1970s which put energy efficiency on the agenda; and the acknowledgement of deepening environmental problems from the mid 1980s followed by attempts to resolve such problems within the frame of the status quo epitomised by the notion of ‘ecologically sustainable development’ (ESD). This was first coined by G H Brundtland’s report to the World Commission on the Environment, *Our Common Future*, in 1987. ESD gained initial exposure in Australia in the early 1990s through a cluster of government/industry/NGO sectoral working parties created by the Hawke government. Public concern about environmental problems were heightened at this time..

The EcoDesign Foundation arrived out of that moment, and the aim of what is said here is to reflect back upon it, and then to project forward. The concern to be addressed will be with general trends rather than particular individuals and projects.

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<sup>1</sup> James Meller (ed) *The Buckminster Fuller Reader* Harmondsworth: Pelican Books. 1972.

### **Design in the face of resistance**

A decade ago there was still a significant amount of resistance to bringing architecture and sustainability together. It was not usual to be told 'good architecture always takes environmental concerns into account'. It would also be incorrect to assume that all of this resistance has disappeared. Rather three things have happened: resistance has partly gone underground; there is a body of architects who mouth environmental rhetoric, but never go beyond superficial tokenism and conduct 'business as usual'; and then there is constituency who treat it with silent disdain, or a sneer, and think architecture is about higher and more lucrative things.

It would be thus quite incorrect to assume that 'sustainable architecture' has arrived, that it has a firm and developed place in architecture education, and that what it is and does is established. Notwithstanding the creation and coverage of 'green projects' by the architectural press and a plethora of books, architecture as an agent of sustainment is still in its infancy.

### **ARCHITECT DRAWN BY THE CLEFT STICK**

Architecture exists in a contradiction: it strives to be both art and science. 'Environmental, green, eco, sustainable' architecture has always stumbled between these poles. Over the last decade a number of local positions have emerged, often under external influence, and have variably developed, for example:

**The second environmental vanguard** — those architects coming out of 60s and 70s environmentally attuned architectural science who became principally concerned with building performance. This is where many 'energy architects' came from.

**The recycler** — recycling construction materials is an old rather than a new practice, however, it was given a higher profile by the way counter culture architects of the 1970s used recycled materials to make an expressive anti-materialist (ideological) statement.

**The renewable energist** — coming out of 1960s alternative technology, renewable energy technologies has come into the mainstream of many economies. Vested interests, subsidisation of fossil fuel energy generation and myopic federal government energy policy have all resulted in this not being the case in Australia. While there are increasing numbers of architects committed to renewable energy technologies their efforts are severely frustrated and restricted by unfavourable economics (which in turn blocks the arrival of economies of scale that would lower prices).

**The technofixer** — this has been perhaps the fastest growing fraternity. Initially it reductively sought 'off the shelf solutions' via the specification of fixed value green materials, the use life-cycle analysis derived embodied energy data as normative and 'ecological systems'. Gradually contextual deterrents and 'design-life' factors have added complexity. In response, design strategies like 'long-life/loose fit' and 'design-for disassembly', have been introduced. This constituency is increasingly coming under the influence of **ecodesign eco-efficiency** (this development is becoming marked a move from its application to industrial technology to building operation and rating schemes). Mainstream scientific rationalism has also arrived on the scene, especially in terms of larger projects, reinstating the authority of science via the determination of tools like computational fluid dynamics. Effectively, tacit, craft and instinctual knowledge is being attempted to be downgraded.

**The aestheticist** — this is the position that assert that 'green' architecture must have an aesthetic, or worse, reduces 'green architecture' to being little more than just an appearance (the most overt form of that being a

building which 'blends in with nature' being claimed as 'ecological'. This often collides with ego (an architecture of authorial recognition) and with technofixes employed to improve the performance of a flawed expressive form.

**The planner** — the rise in the profile and politics of environmental problems in the urban context, environmental regulation, the expectation of the growth of urban problems due to continued population expansion, the efforts to consolidate urban growth, while constraining sprawl, and to deal with specific threats, like for instance traffic congestion, have meant that the legislative framework in which architecture is practised is undergoing change. But 'sustainable urban design' is still very underdeveloped. At the same time environmental performance requirements increasingly 'trickle down' to local authority planning departments. How this happens, the quality of demands made on development by assent authorities, the knowledge of planning staff, all poses significant issues. However, two fundamental issues confront the architect (i) to recognise that the environment of the production of architecture is changing, and (ii) that the space of planning does not correspond to the space of environmental impacts (the 'site' may be a legal entity but it has no ecological status — one can reduce site inputs and outputs, but never fully contain it.

Outside this listing is that of the **cultural pathfinder** — here we have the most marginal position, which asserts that the most important design actions centre on reducing impacts by reducing scale, changing lifestyle, workstyle, that nature of what happens in a building. Building performance here becomes subordinate to a culture of sustainment rather than to biophysical determinants.

There is one other qualification — the positions sketched are all more complex than a brief summary indicates, furthermore, they do not exist necessarily as discrete but cross-fertilise.

### **THE SCALE OF THE PROBLEM**

What first has to be confronted is that rate at which the unsustainable arrives constantly outstrips those actions that strive to advance sustainability.

The evidence of the unsustainable is most overtly seen in the rate of increase of the 'impact population'. To understand this consider that at the opening of the 20<sup>th</sup> century the global population was 1.3 billion, at its close it was 6.0 billion. However, over this period the mean impact of one person increased by a factor of at least 50 (not least because of increased energy and material resources uptake) — a more accurate comparison is thus 1.3 : 6.0 x 50. Continual rapid urbanisation throughout the world and the impetus of globalisation to maximise the numbers of consumers and consumption, constantly increase the impact of populations, while at the same time raw population numbers are projected to rise by over 2 billion in the next 50 years. It is against this backdrop that one has to view environmental problems like global warming.

Increasingly, there is hostility to acknowledging and engaging this situation — to speak it is to be labelled as negative and as doomsayer. What we are told is wanted are 'solutions'. However, without a preparedness to confront the problem of the unsustainable, in general and in circumstantial conditions, one cannot define what a solution would be. This is in stark contrast to so many of those actions that get presented as 'solutions' that de facto sustain the unsustainable<sup>2</sup>. These remarks do not imply everything done in the name of sustainability is worthless — clearly a good deal of value is learnt, but they are drops in the ocean. What

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<sup>2</sup> This position has been enunciated many times in articles by the EcoDesign Foundation authors, this especially in writing on the Olympics, which, while for sum is almost being placed in a sacred space, nevertheless epitomises the application of sustainable technique to sustain the unsustainable.

they do suggest is that the task is enormous, complex and that we are still at its very start. So what does the future hold for architecture with courage and vision? Here are just three examples:

1. The whole project of retrofitting the existing built environment, to reduce impacts and to enable it to deal with the coming climate has to be given a great deal of attention economically, politically, educationally, architecturally and environmentally.
2. Linked to, and beyond, retrofitting, is the project of design for the coming climate (to go on designing as if the climate we know is the climate the built environment will experience in the coming decades is best myopic and worst irresponsible).<sup>3</sup>
3. Architecture has to break out of its ghetto and reinvent itself as far more than an egocentric service industry in the spaces of privilege that are, in actuality, on the margins of the built environment.

No doubt such remarks will sound strident, or even arrogant, to some. This is not their context, and their intent is wholly constructive. They come from a small organisation that has learnt how to survive, exercise influence, deliver practical results, build strong relationships with collaborators and clients, and constantly advance adventurous ideas. The remarks express what EDF knows from its experience — it knows what all thinking people know, which is that our condition is extremely critical, leadership is essential, that change is vital, that dumbing down threatens, and that the status quo will not survive.

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<sup>3</sup> This is one of major project areas the EcoDesign Foundation over the next few years and is outlined in a paper able to be seen at [www.edf.edu.au/DCC/Briefing.htm](http://www.edf.edu.au/DCC/Briefing.htm)