

Key principles in making sustainable buildings and places

Sandy Halliday traces the evolution of the principles behind sustainable design, and argues for their much wider use.

'Sustainable development' has suffered from an image problem. It requires us to act in a sensitive manner towards natural systems, and has for many years been seen as a restraint on development per se.

A clue to the image problem lies partly in our use of language. Currently the 'S' word is rarely out of the press, lecture theatre or office. For something this ubiquitous it is remarkably poorly understood, and the source of much debate and disagreement. Engineers who justifiably splutter at their students' failure to distinguish between 'power' and 'energy', and politicians who can fit a bus between 'government' and 'parliament', seem content to use 'sustainability', 'environment', 'global warming' and 'climate change' interchangeably. It highlights a real confusion. It appears that increasingly people talk about sustainability like ten-year olds talk about sex – a lot, but without any great insight. We need to talk about the 'D' word. Sustainability is about how humanity *develops*.

Only recently, 37 years after the first intergovernmental conference on environmental issues, and a similar period after I first read about the impact of climate change in my school text book, is it emerging that sustainability is a totally justified restraint on *inappropriate development* and a major driver of reversing unsustainable trends and hence improving quality of life for all.

Human skills and ingenuity have transformed the environment. The quality and quantity of life in recent decades has vastly extended for many. However, for some, inappropriate development means that high quality of life has become a distant collective memory, and for many others there have been unintended consequences that can take the edge off any celebration. Whether the unintended consequence is escalating knife and gun crime, disaffection, inequality, racial and religious tension, water pollution, the rise in asthma, an obsession with consumerism, or erosion of the rights of the elderly – the list is long – the extent to which our activities lead to 'unsustainability' has become clearer.

There is much to do. This is equally true of Africa, Brazil and of deprived areas of the UK. Across the globe there is a realisation that pursuit of 'progress' has unintended consequences that need to be recognised and avoided. Resolving the dilemmas that result from this progress, and taking frequent reality checks to ensure that what we are doing is taking us in the right direction, is *the* most progressive, positive agenda, and perhaps the most awesome challenge we face. Yet for years it has not been seen as such.

In my work, I find clients, designers and students most responsive to the concept of sustainability when they are presented with the emergence of the fundamental principles, rather than a definition. A multi-dimensional perspective on the issues and challenges provides a good grounding and a basis for creativity and problem solving to emerge.

The history of international action

Much visual art, religion and poetry would suggest that concerns for the natural environment are deeply rooted in the human psyche. Yet it was very recently that environmental protection became a respectable concern. In the 1950s such concerns were perceived as a preserve of the elite and the politically subversive – strange bedfellows in other times! A change in attitudes began in the 1960s mainly in industrialised countries, with concerns about pollution, disaffection, wealth imbalances and urban sprawl. Rachel Carson's work on toxicity played a seminal role.

The first Club of Rome meeting in 1968 opened up the international debate on 'How we develop?' The resulting 'Limits to Growth' report pointed out that it is not the number of babies, cars or refrigerators that put stress on an environment, but the efficiency with which we use resources and minimise pollution and net waste. It delivered, to my mind, the optimistic conclusion "that there are limits to growth but no limits to development" – development being largely in our power of design, invention and creativity.

The UN Conference on the Human Environment in 1972, at which 113 countries were represented, transformed the environment into an international political issue and signalled the birth of agencies and legislation to start to resolve the conflicting dilemmas of growth, development and environment. It was recognised as pragmatic and in every country's interest to do so.

In 1987, the Brundtland Commission published a report which coined the term 'sustainable development'. This established the agenda for the international policy debates and agreements that followed, covering concepts such as inter- and intra-generational equity, the precautionary principle, the protection of biodiversity, and the internalisation of external costs. That was over 20 years ago, so where are we now?

Sustainable design is that which delivers real benefits

Most countries have ignored the agreements and are adopting styles of development that are inappropriate and unsustainable. The quality of most built development, for example, is a disgrace. Global improvements are the exception, not the rule. There is ever-increasing demand on the earth's limited resources, escalating pollution and growing inequality. In industrialised nations, there is a growing tendency to nihilism. With evidence of massive environmental damage in developing nations it can seem pointless to try to do anything.

So it is now more important than ever to appreciate that *sustainable design is that which delivers real benefits*. We need look no further than pedestrianisation to see that rules and guidelines reap instant rewards. And there is much to be done!

The legislative context is unhelpful, and typically two decades behind best practice. Instead of seeking best value, healthy, efficient buildings, our government and policy initiatives are looking for one-dimensional margin-chasing technical fixes which, like the private financing initiative (PFI), will leave a sorry legacy. Howard Liddell's book¹ on eco-minimalism covers the territory in depth, based on more than 30 years of practice and applied research.

To meet the challenge in the UK and beyond we have to enhance quality of life for all by designing healthy buildings and environments fit for individuals and communities both now and in the future. We need to minimise resource throughputs, waste and pollution, and to fulfil our responsibility to protect other species and ecosystems. Buildings and the built environment will therefore increasingly be required to satisfy a number of criteria, including that they should:

- enhance biodiversity – not use materials from threatened species or ecosystems and improve natural habitats where possible through appropriate planting and water use; support communities – identify and meet the real needs, requirements and aspirations of communities and stakeholders and involve them in key decisions;
- use resources effectively – not consume a disproportionate amount of resources, including money and land during material sourcing, construction, use or disposal; not cause unnecessary waste of energy, water or materials due to short life, poor design, inefficiency, or less than ideal construction and manufacturing procedures. Buildings have to be affordable, manageable and maintainable in use;
- minimise pollution – create minimum dependence on polluting products, materials, management practices, energy and forms of transport;
- create healthy environments – enhance living, leisure and work environments; and not endanger the health of the builders or occupants, or any other parties, through exposure to pollutants, the use of toxic materials or providing host environments to harmful organisms;
- and manage the process – stewardship of projects is a vital and overarching aspect in delivering sustainable projects, both in the first instance and also in ensuring their performance over time. Too many aspirations are undermined by failure to manage the design process, particularly at crucial handover points where responsibilities change. This requires us to identify appropriate targets, tools and benchmarks, and manage their delivery.

Sustainable design is a process not a product

Constant innovation and vigilance are vital to delivering best practice. At Gaia Research², we try to engage clients, designers, developers, politicians, users, teachers, parents and children fully in what we are seeking to achieve and how to achieve it³. We use tours, workshops and community consultation. We have found that there is often a willingness to make a difference but many designers and developers simply do not know what they do not know. Much of our work involves an education process to encourage clients and teams to set their own targets – we then become facilitators in the delivery process.



As an example, the passive-solar⁴ school at Acharacle, Scotland came about through taking interested politicians, designers, educators and estate managers on working tours of schools in Norway and Germany. The experience generated an invitation to write a brief for a best practice sustainable school and Gaia won the tender competition to build it.

Our regeneration projects start from where residents are rather than wholesale clearance. They result in successful, affordable, healthy new-build and refurbishment initiatives, driven by and for communities.

The future

Alongside the environmental destruction in developing countries there are very many exemplar projects evolving in Continental Europe, and ecological towns developing in South America, Taiwan, India and the USA, which surpass the UK's puny initiatives. These will challenge people to think about what is *appropriate* development. Their design ambitions and success or failure may determine life quality for the majority in this millennium.

How good would it be if future development of land, buildings and the economy were non-toxic, equitable, supportive of community and bio-diversity and resource-efficient? *This is sustainable development*. It's about design. We have the knowledge. We just need to commit to making development appropriate. It's up to us.

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This article is based on a presentation given at SGR's 2008 conference (see p.19). Her latest book is reviewed on p.25

Notes and references

1. Liddell H (2008). Eco-minimalism - the antidote to eco-bling. RIBA Publications.
2. Gaia Research is part of a 'boutique' practice which combines architecture, engineering, landscape and masterplanning – see: <http://www.gaiagroup.org/>
3. For more examples, see: Halliday S (2007). The Green Guide to the Architect's Job Book. RIBA Publications; Halliday S (2008). Sustainable Construction. Butterworth-Heinemann. Gaia Research also has an extensive range of publications available, many on-line – see <http://www.gaiagroup.org/Research/publications.html>
4. The school has been designed to the 'passivhaus' standard – see <http://www.passiv.de/>.