

Where are the architects who will put the environment first?

Should we stop building airports? Return to mud and thatch? The climate crisis is an opportunity for creative thinking, but the values of architecture need a radical overhaul

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Ilford community market in east London, opening next year, will have no concrete foundations and a timber structure stabilised by rocks in metal cages. Photograph: Interrobang Architecture and Engineering

Nearly 40% of UK greenhouse gas emissions, to use a figure architects love to bandy, are caused by the built environment. Or a bit more, depending on the definitions used. It's an arresting figure. It suggests that the design of buildings and the planning of cities can do much to counter climate crisis.

Architects like to think of themselves as public-spirited, well-intentioned people. The profession tends to attract people who want to change the world for the better. And what could matter more than the prevention of environmental and societal collapse? It makes squabbles about architectural style or form seem trivial by comparison. So what would architecture look like – more importantly, what would it be – if all involved really and truly put climate at the centre of their concerns? Would there be no more concrete, given the material has been fingered as particularly destructive? Or an end to towers clad in panels that have to be replaced every 30 years? Or much less building altogether?

It is a question raised earlier this year by the launch of Architects Declare, in which 17 winners of the Stirling prize proclaimed a set of principles by which they and – they hoped – others would from now on work, and by the debate that followed. How serious could these architects really be, went one of the reactions, given that a number of them are designing major airports? A more radical version of the question will be put by the young curators of the Oslo Architecture Triennale, Maria Smith, Phin Harper and Cecilie Sachs Olsen, which opens later this month. “Just fiddling around with what the market gives us is not enough,” says Harper.

What is considered sustainable differs wildly depending on who you ask. The World Green Building Council, an organisation supported by members from the construction industry, holds up the seemingly surprising example of Barangaroo, a huge high-rise development on the Sydney waterfront. Harper and Smith cite traditional earth-building techniques and ingenious experiments in building structures without cement or steel. Somewhere in between is a building like the Stirling prize-shortlisted Cork House in Eton, about which nobody has a bad word to say.



The Stirling prize-shortlisted Cork House in Eton. Photograph: Ricky Jones

The argument of Architects Declare – which might be called the sensible middle ground – goes something like this: architects (and for that matter contractors, clients, engineers and everyone else involved in making buildings) have no excuse for not giving their utmost to make their work have as little impact on the environment as possible. They have to consider everything – how far stone might have to travel from quarry to site, for example, and whether or not a building’s components will end up as landfill when it is demolished.

It is not enough to reduce what are called the “in-use” costs – heating, ventilation, lighting, water, waste, maintenance – but also the “embodied energy” that goes into construction and demolition: quarrying cement, smelting steel, firing bricks, shipping materials to site, putting them in place, taking them down again and disposing of them. Until recently the construction industry has concentrated on in-use costs. The British building regulations, for example, set reasonably high standards for the performance of buildings, but are silent on embodied energy. This makes no sense – there’s little point building something that performs magnificently in use, if it takes decades or centuries to pay back the expenditure of energy that went into its construction.

Painful choices may be required – giving up some dearly beloved brutalist-style concrete or a favourite brick. It might mean some genuinely difficult dilemmas: concrete, if used right, slows the rates at which a building cools down and warms up (good) but is made with cement, a material that singlehandedly accounts for about 8% of the world’s carbon dioxide emissions (not good).

Sustainable design shouldn’t be seen as just a technical fix, a matter of paying the right consultant enough money to make sure the building ticks enough boxes, or of buying the most magical available piece of cooling technology. It should rather be integrated into the art of architecture. The ideal is that it should help buildings be all round better, longer-lasting, more pleasurable, more beautiful – “generosity, quality of materials, what people want – it kind of makes them endure” is how Alison Brooks, one of the Architects Declare signatories puts it. It could mean more natural stone, more timber. This is why the Cork House appeals – its material is lovely stuff, which also happens to be renewable, recyclable and highly insulating.

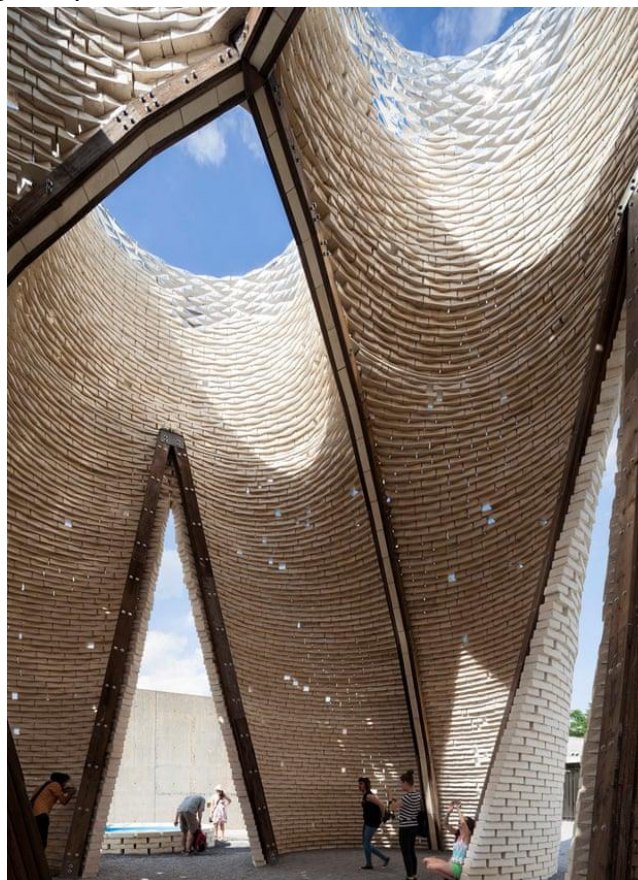
Slightly more radically, the architectural profession needs to reconsider its value systems, what is considered good and what bad. Architects are still trained from studenthood to perform in what Steve Tompkins, one of the driving forces behind Architects Declare, calls a “competitive and individualistic profession”. They get more glory for designing a singular new building than they would if they worked out a good way of insulating old houses. Yet, as most of the building stock of the future is already with us, and as demolition and rebuilding entails the chucking away of whatever went into making the original building, the latter is likely to be more useful than the former.

All of which, if every architect pursued it with full commitment, would be a significant advance. This collection of good principles, however, doesn’t answer the airport question, which highlights the limits on architects’ powers: it is not up to them to decide how much air travel there is in the world, which leaves them with the choice of refusing the commission to design airport buildings, or helping them to be as “green” as they possibly can be. Grimshaw Architects, Foster and Partners and Zaha Hadid Architects, signatories of Architects Declare, have opted for the latter. They are working on terminals in Heathrow, Mexico City and Beijing, respectively.

For Jeremy Till, head of Central Saint Martins school of art and design, these architects' choice is a "farce." "You can't have a carbon-neutral airport," he says. Architects have to do more than be well-intentioned instruments of what he calls "an extractive industry." They have to be activists as well as designers.

Maria Smith and Phin Harper believe drastic times call for drastic actions. If, as the Intergovernmental Panel on Climate Change said last autumn, there were only 12 years left to limit climate change catastrophe (make that 11, as nearly a year has passed since then), the conventional processes of architecture are too slow to make any difference. By the time a well-considered, carefully calculated development has successfully traded off the inputs and outputs that went into its construction, it will be too late. Rather the whole attitude to construction has to change now. Which also requires the economic system behind it – that is to say, capitalism – to change.

Their Triennale in Oslo, a series of displays and performances starting on 26 September, will apply to architecture the economic and political idea of degrowth – the beliefs that an alternative has to be found to the continuously rising GDPs that are fundamental to capitalist economies. For Smith and Harper it is about using resources that already exist and, rather than serving "utilitarian goals of investment and profit", concentrating on "what really makes life worth living". "All the ingredients for a good life exist somewhere in the world," they say – it's just a question of enabling everyone to have access to them.



Hy-Fi, a temporary tower outside MoMA PS1, New York, made of mushroom mycelium. Photograph: Living New York

For architecture this might mean learning from indigenous building techniques based on using renewable materials close at hand, such as mud walls or thatch, enhanced with modern technology. Smith and Harper give as examples machines for making bricks out of mud, wall panels made of hemp and lime, materials made from compressed recycled denim or from ground-up pine needles mixed with pine resin. There is a technique for building columns by filling heavy duty fabric with sand or rubble. There is mycelium, a form of fungus that can be made into bricks.

A practical example of this thinking is the Ilford community market, a project by Smith's practice, Interrobang, which is due to open next year. Here there will be no concrete foundations, but a timber structure stabilised by rocks in metal cages that can be demounted and reassembled with minimal waste or impact. It should also be possible to make a humble kitchen extension, argue Smith and Harper, using materials dug up from the ground around it, "rather than importing steel reinforcement from China". It would only require a different idea of what a kitchen extension should look like.

There are a few gaps in the thinking articulated by Smith and Harper. If action on climate is urgent, we probably can't wait for the entire economic and social basis of the modern construction industry to change first. It's also not obvious how some of the experimental techniques they mention can be developed at speed and realised at sufficient scale to make a meaningful impact.

They themselves don't pretend to have all the answers. But then, it's also clear that more moderate members of the profession don't have all the answers, either. What is clear is that everyone involved in the design and making of buildings has to do everything they can to mitigate their effect on climate. Which, if we're really lucky, will also lead to better architecture.

Material change: reinventing how we build

Barangaroo, Sydney

A large-scale commercial development that tries to modify conventional processes rather than replace them; for example, by reducing the amount of cement in concrete, or using water from an adjoining bay to help cool the towers of homes and offices. Its approach has won awards.

Sandbag columns

The Canadian architectural practice YYYY-MM-DD are developing what might be called super sandbags: structural columns made by containing sand or rubble in the type of heavy-duty fabric used for shipping construction materials. In principle, it means you could build using whatever is available on a building site, but it's still at a speculative stage.

Radical recycling

Ma-tt-er, a London-based "materials research design studio", are pushing the possibilities of natural and recycled materials – plaster made from mussel shells,

floors made from seaweed, denim from old jeans compressed into a load-bearing material.

Mycelium

The fungal substance that gives mushrooms their structure is now touted as both an organic substitute for plastic and a vegetarian substitute for beef. Architects are exploring its possibilities too, most conspicuously with temporary towers built outside MoMA's PS1 gallery in New York.

Engineered timber

The processing of wood such that it's strong enough to build multistorey buildings is proof that experimental techniques can become mainstream. Engineered timber is now frequently used as an alternative to concrete, at large scales. The only snag, as the engineer **Mark Skelly** points out, is that there isn't enough sustainably sourced timber in the world to make all buildings out of it. The simplest way to build green is not to build at all: existing building stock is a vast store of carbon and of resources that are lost when a building is demolished. Re-use is usually seen as less glamorous than building new, but it's a good use of architects' skills to find ways to adapt rather than replace.