

Architectural Theory for Sustainability

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Why has architecture lagged culturally behind environmental concerns?

Despite the fact that architects have often overestimated themselves, calling themselves problem solvers, in the last 50 years there seems to have been little recognition at a professional level of their role in the environmental problem, perhaps also due to the fact that they have given few coherent answers to the problem, both in the search for its origin and possible solutions.

For some years now, this has led us to think that there is a sort of indifference on our part, sometimes even in the form of active resistance, to leaving 'business as usual' behind: why should I abandon my design paradigms? It seems, however, that in recent years, on the contrary, due to a large number of campaigns, initiatives, commitments and goals by a much larger segment of architects and their institutional bodies in search of change management, this question may sound obsolete.

It also echoes in our schools, where even architecture students are speaking out in increasing numbers about their unpreparedness to help restore a damaged and damaging built environment. Now it seems that, at last, the great freeze in architecture's attitude towards the environment has reached a turning point towards greater activism. If this is the case, why has it taken so long to get involved in this necessary, wide-ranging and interdisciplinary debate? What do we already have on the table, and how can we avoid slipping back into passivity? How can we continue to feel responsible for it?

We should first try to understand why, over the past 50 years, architecture has lagged culturally behind environmental concerns. Some answers, at least, can be found in the culture of architecture itself, or to be more precise, in the culture of Western architecture since the beginning of the 20th century. As with other disciplines, it has been difficult for architecture to analyse itself and recognise its role in what is now an overt environmental crisis, and to actually work on it.

The Modern Movement has always had within it a minority practice focused on nature; however, it has never been the dominant version of Modernism and, until recently, it seemed that it would continue to live in this minority condition. Today, some argue that in order to increase its effectiveness in sustainability, architecture should shift to a materiality-based view of itself: but perhaps we think the opposite, namely: what are the role and importance of theory and criticism in pursuing and achieving the same goal? And, since we are in a school, to what extent can, and perhaps should, architectural education reconsider how and what it teaches in the coming years? This is in no way meant to diminish the extraordinary contribution that a minority, both in practice and in architectural education, has made to the development of environmental design and environmental thinking over the last 50 years: just think, for example, of Tomás Maldonado with his «La Speranza Progettuale» (1970) [English edition: «Design, Nature, and Revolution: Toward a Critical Ecology», 1972].

First and foremost, starting today, we should be able to recognise the examples of innovative and determined people who are pursuing other ways of practising architecture

and other ways of training architects, those who are trying, and hopefully succeeding, in reformulating the discipline so that it becomes the model of a practice centred on nature, moving away from marginalisation and getting to the heart of the problem. This is urgently needed, before we find ourselves merely a quaint throwback to the past (“Technology is the answer, but what was the question?”, Cedric Price wondered in 1966), with engineering and the sciences assuming the role of those who are looked to for solutions to problems too pressing for a profession unprepared to meet these challenges with disciplinary content of its own and exclusive.

Perhaps we could start by asking ourselves: how has the very concept of sustainability in architecture evolved, given that traces of this issue can already be found in Christopher Alexander, Bernard Rodofsky, Reyner Banham, and up to the recent concept of the Anthropocene?

Many take a kind of sustainable design for granted as if it were now standard practice, others see environmental performance as a mere corollary of the digital revolution. What are the key concepts and performance criteria that provide the cognitive basis and critical framework needed for research and professional applications? Or will we really be, as the French politician Bruno Durieux said, “the ungrateful children of our wealth”?

But perhaps we should remind ourselves what, exactly, natural environment means. Because the very idea of nature, of course, has been appearing in thinking since time immemorial, I would say, in various ways.

Very briefly, it is from the beginning of abstract logico-rational thought and up to at least the 18th century, that human beings return to the concept of nature always sensing, and this is perhaps useful, the idea of the limit of the very idea of nature, repeatedly attempting to overcome the abyss between the reality of nature and the reality of history, between nature and society, between nature and ‘human nature’. Because this is where the game is played, right from the start, this otherness of the human species within nature itself.

Certainly, one cannot make of the environment only a negative definition, saying it ‘only’ as an environment or nature that human praxis has made human historically, the environment is (no longer) only ‘humanised nature’. But it’s also sure that it’s in this context that the modern idea of environment was born and developed.

That is, the Welt is culture as classically understood by anthropologists, artefacts both symbolic and tools. It is precisely the symbolic value, rather than the strictly functional value, that transforms ape behaviour into human behaviour-artefact.

But it is precisely the reality of the ‘human environment’, the reality that for centuries has represented the real and concrete space where we have operated and lived and survived. The modern world, therefore, is no longer inherited, it escapes the intimidating force of nature, it is, on the contrary, our realisation, it is inseparable from our self-realisation.

But it is not only the philosophical sciences that problematise the awareness of the very existence of a human environment.

It can be seen as a membrane between man and reality, between man and himself, between man and history, as studied by the naturalists. It was they in fact, who, in the 19th century, established the basic criteria of general ecology, and then collaborated with sociologists, psychologists, anthropologists, and today with geologists on the definition of the concept of the anthropocene, until the definition and development of human and social ecology as part of ecology itself.

What is the HUMAN environment? Is it something devoid of intentionality, and coherence, a super-structure, arbitrary, of isolated facts, and therefore an uncontrollable and uncontrolled phenomenon? Well, looking at the relationship between the human being and objects, it seems so, an irrational relationship, even buildings falls among these objects.

How irrational it would be to design a Seagram Building today, after 65 years. A few days ago I was reading an article in the Architects Journal, entitled «It is time no longer to praise the Seagram Building, but to bury it» where the two authors compare the energy profile of Mies' Seagram Building with Waugh Thistleton's 6 Orsman Road building. "The most important building of the millennium", wrote Herbert Muschamp, architecture critic of the New York Times, in 1999. The office tower has remained admired and influential since its completion in 1958. It is no longer time to praise the Seagram, but to bury it: to explicitly acknowledge that its fabulous elegance was a visual expression of its immense carbon footprint. Mies' quest for aesthetic clarity was an architectural celebration of building materials and services that required an exorbitant input of fossil fuel energy. Today's awareness of orientation, shading and insulation was completely alien to Mies, who delegated such concerns to others, stating that "it is up to the engineers to find a way to keep heat from entering or leaving". His engineers succeeded in achieving comfortable interiors, but only at the cost of enormous amounts of energy-intensive mechanical services.

So an abundance of energy is seen as a synonym of freedom on the part of the designer and a lack of energy is seen as a limitation, not only in its being lacking, but also because it entails the use of certain materials and construction or compositional techniques that seem to go beyond the simple compositional data, as if it were an unwelcome guest. Or a grit for which we are not accountable, or were not, as Mies replied: "it is up to the engineers to find a way to prevent heat from entering or leaving".

The Seagram building was designed in the oil-rich 1950s, with rapidly falling energy prices and hopes of future atomic fusion power that, as the chairman of the US Atomic Energy Commission said in 1954, would make electricity 'too cheap to measure'.

Under these circumstances, Mies' famous elegance and precision of detail was a translation into form of the new freedoms that came with the world's cheapest energy. A curtain wall of coloured, single-glazed windows celebrates the fact that forced-air power freed the building envelope from the traditional obligation to keep out the winter cold or the summer sun. Instead, Mies was able to make his glass windows an artistic meditation on transparency, clarity and elegance.

With the fossil fuels of the 1950s, it didn't seem to matter whether they also radiated the building's heat in the cold New York winter, or collected the sun's heat in the summer, making them one of the main causes of the building's exorbitant energy consumption for heating and cooling.

But what is curious, and perhaps interesting for us, is that Mies' original idea was to keep the steel structure exposed! This possibility was later discarded for reasons of fire safety: it would have increased this danger even further. This is an important point, that Mies took into account the fire regulations, and not the zero carbon regulations, because they were not mandatory at the time. What would the Seagram Building look like if the fire regulations had not been mandatory (we know a little about that: exposed steel structure), and what would the masterpiece look like with a U-value close to zero? Would Mies have been able to design a masterpiece or not? I think, we would naturally answer yes, because he always proved it, and therefore, why think that energy-saving standards could have been so powerful, more powerful than Mies, for architectural purposes.

But why only talk about Mies? Mies was not the only one who designed with little attention to energy inputs. High levels of operational energy were programmatic for Modernism (with a few notable exceptions, and pardon the generalisations). The Seagram represents the first generation of office buildings built to depend on air conditioning. Since the mid-20th century, commercial and public buildings in the United States and elsewhere have typically

been designed for a half-year-long cooling season, nearly doubling operating costs that were previously limited to winter heating.

For Mies and his modernist colleagues, history was often a kind of boundary to be crossed, and often with the aesthetics of industrialisation: “You cannot go forward looking backwards,” he used to say.

Most modernists, however, opted for less sustainable forms of simplicity. The Modern Movement was an explosion of creative responses to the cheap energy of fossil fuels, embodied in concrete, steel and glass. These three key materials of Modernism make up the majority of the Seagram Building.

Is there hope for a way of designing that reproduces Mies’ principles of simplicity and functionality not as aesthetic devices, but as the basis of energy economy? Buildings designed in the very last few years consume about a tenth of the energy that the Seagram Building consumes, but in the Seagram we have 140 kg of iron per square metre, and in London’s newest green buildings we are down to 90 kg of iron per square metre, which does not seem like a revolutionary achievement, in 70 years, and this is due to the laws of static and earthquake proofing, precisely because we have not yet found such a high-performance material, as iron is, in terms of mechanical performance at such a low cost, and so on. And it seems that the same applies, although it is painful to say so, to hydrocarbons. At last year’s COP26 in Glasgow, despite the fairgrounds of good political intentions, behind the greenwashing intentions, 80 per cent of the bilateral trade agreements between nations were trade and purchase of oil.

Take for example another hydrocarbon by-product, polystyrene, a substance invented some 160 years ago. After the events of the Grenfell Tower that burned down in London in 2017 causing more than 70 deaths, the RIBA start to implement the minimum design standards for Fire Safety regulation, forcing the use of spacers between insulating panels in the façade, while in Italy hundreds of thousands of buildings are being insulated with polystyrene slabs using the same executive techniques as 30 or 40 years ago: so that the fire of the Torre dei Moro on 21 August 2021 in Milan could have ended up much worse. I don’t want to open this chapter here, which includes the reckless use and management of tax bonuses, the lack of long-term vision in terms of safety, and the failure to have the foresight, let’s call it that, or the time, as has happened in the UK or other European countries, to commission a charity such as the RIBA, a non-mandatory professional body, to implement a professional standard that becomes the minimum requirement for all designers. It should be noted, anyway, that the two buildings in Milan and London used the same Aluminium Composite Panel, only the former had used it in the 1970s, the latter a few years ago.

In spite of the increasing awareness of sustainability, however, steel, glass and concrete, materials produced using fossil fuels that imply a huge use of heat, remain by far the most widely used building materials in contemporary construction.

Yamina Saheb, in her report for the UN’s Intergovernmental Panel on Climate Change (IPCC), warns that architecture lags behind all other sectors in decarbonisation.

And while improved insulation and modern technologies have significantly reduced emissions from individual buildings since 1990, this gain has been entirely offset by the increase in emissions caused by wasteful low-density planning and the increase in overall construction.

From the late 1990s, in some academic and political circles, the term sustainability started to be treated with a degree of skepticism; architects started talking about ‘corporate green-wash’ and ‘green-bling’. Martin Pawley, writing in the Architects Journal in 2000, described the terms ‘sustainable development’ and ‘sustainability’ as ‘highly contentious’.

In 2010, Professor Mark Jarzombek from MIT suggested that “an architectural discourse about Sustainability – from a cultural and theoretical point of view – is tottering on irrelevancy”.

Jarzombek was joined by a growing chorus of theorists concerned that sustainability had adopted the modernist/rationalist/functionalist approach to environmental problems. One of the dominant arguments coming from the critics of sustainability was that the problems of the environment could not simply be addressed by the efficient use of technology and materials. In 2000, Susannah Hagan proclaimed that “the sustainability lexicon is exhausted, overused and abused. The phrase ‘sustainable development’ has haunted urban planning, urban design, urban geography and, above all and most meaninglessly, political discourse for the last two decades.”

Despite that, one high-profile event that epitomised the shift in the architectural discourse in favour of environmentalism and ecology was the Expo 2000 in Hanover. The first Expo to be held in Germany, the Hanover event was held on a 160-hectare site on the outskirts of the city and was organised on the theme «Man, Nature and technology – Home of a New World».

«Ecosophy» is the term used by Félix Guattari in the 1980s to describe a convergence of ecology and philosophy, even if the person that is most clearly associated with the notion is Arne Naess, the father of the deep green movement.

In October 2020, Bjarke Ingels, founder of danish practice BIG, gave an interview in Time Magazine: “When you’re building a house, there’s a few things you can do—add some solar panels on the roof and so on—but most of it is not very effective.” If you’re planning a city block or a neighborhood, though, you can start working with some “synergies,” he says: capturing rainwater over a large area; designing to take advantage of the differences in energy use between residential buildings, which typically spend energy on heating, and commercial buildings, which spend energy on cooling in the middle of the day. “There are all kinds of things you can start doing. And every time you go up in scale, you can actually do more.”

in «Singapore Songline» (1995) Rem Koolhaas argues: “Worldwide, landscape is becoming the new ideological medium, more popular, more versatile, easier to implement than architecture, capable to conveying the same signifiers but more subtly, more subliminally...”. Kenneth Frampton made a point in the fourth edition of his famous «Modern Architecture» (2007) that we could now look at ‘topography’ as a significant driver in the design process alongside tectonics. More recently, Anthony Vidler and others have talked about an ‘expanded field’ for architecture in which the boundaries of the discipline were extending and the incorporation of landscape is a significant element in this process. Alongside the development of biological analogies as a generator of form and structure, it was clear that the imitation of landform and the integration of building into landforms, so that they were indistinguishable, were significant new tendencies. The idea of architecture as a discipline is expanding to occupy fields that would usually have been considered peripheral finally appears in much of the theoretical writings of the post-2000 period.

But soon we’ll start to talk about the new buzzwords: Subjectivity and Post-Humanism, Object Oriented Ontology, New Materialism, Bio-Mimicry, Organic & Digital...