

Architecture: From Prehistory to Climate Emergency

by Barnabas Calder



It was an unseasonably hot day towards the end of July 2021. Locally, we were in the grip of a heat wave, with temperatures rivalling those of the Algarve and meteorologists warning that this was to be more commonplace in years to come. The week before, there had been news of extreme flooding in Germany, a few days later reports from Japan and a week after strikingly similar news from the south of England; images of torrents of water gushing through streets and underground stations accompanied by harrowing reports and accounts of businesses, homes and lives washed away. It was in this context I sat down in front of my webcam for a conversation with Barnabas Calder, author of an unprecedented new architectural history, "Architecture: From Prehistory to Climate Emergency".

Reviewing summaries of the book prior to reading it, I had assumed it was going to be another polemical sermon on the climate emergency; a problem that always seems too monolithic and terrifying to bring to mind in a sense practical enough to make any form of action seem worthwhile. The primary focus of the book, however, is a subtly written architectural history, with each epoch, era, style or individual building being analysed by applying a simple line of enquiry: "What role did the energy context have in shaping the architecture?" (Pg xxiv)

The structure of the book is simple yet incredibly effective. Split into two parts, Part One begins around fourteen-and-a-half thousand years ago with hunter-gatherer huts, and spans around fourteen millennia, ending with the Protestant

Reformation of the sixteenth century. Part Two covers a much shorter but much more intense period of time: the last four centuries up to the present day. I asked the author how he arrived at this structure.

"The structure is inherent to the topic in that it is so clearly the structure of human history. There is the same hockey stick graph of the rise and fall of civilisations that bubbles along for millions of years, rising and falling in an arbitrary but broadly patterned way. In the last fifty to two hundred years the energy available to humanity reaches levels never seen before, and the carbon in the atmosphere spikes sharply in a fashion that is spectacularly different to what preceded."

This dizzying timespan may seem ambitious but is key to the overall message and methodology of the book.

"Various people asked me why I didn't start with the industrial revolution. The reason is that because that is not when the story of fossil-fuel starts; the industrial revolution is only a product of that story. The thing about having a much longer timespan in the book is that, over the course of the first half of the book, it establishes the parameters within which agrarian societies operated. From this we can see that the great change isn't any of the many changes over the past two hundred years. It's the change between that and the largely fossil-fuel free agrarian world that went before it."

In this respect the book issues a challenge to the common approach to architectural history. While architecture has always looked to the past for solutions, this book does so with an innovative methodology; one that seeks to understand the buildings discussed as expressions of the energy available to those who produced them. From the naturally balanced hunter-gatherer huts or London's Georgian Houses to the excesses of Khufu's pyramid of Giza, the sixteenth century reconstruction of St Peter's Basilica or the half-kilometre-long New Century Global Centre in China, the book outlines the expansion and retraction of the civilisations that produced these buildings as architectural expressions of energy contexts.

The book is aimed at several audiences, with the primary focus being the staff and students of built environment courses. It also seeks to re-educate those in practice.

"I would like the book to help architecture courses establish

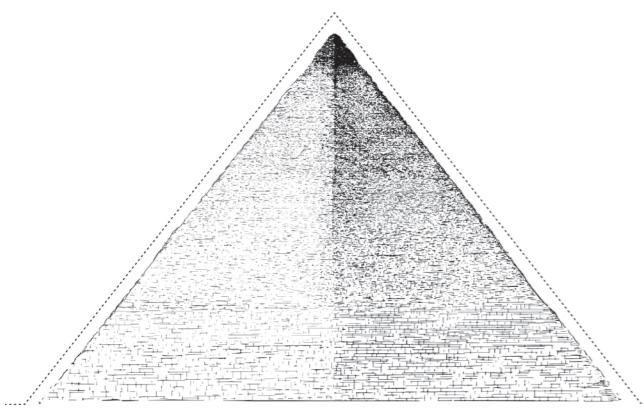
ways of discussing the past which have a relevance to the biggest problem of our age, anthropogenic climate change. It is also aimed at the current profession, so that they can rethink the architectural history they were taught. The aim is to make people think again about the past. To investigate older architecture as a set of precedents and de-emphasise the twentieth century in that respect. We need to stop glorifying Modernism and accept that - while these buildings were wonderful in all sorts of ways - they are terrible precedents for contemporary designers; Modernity is the outcome of very intensive fossil fuel use."

"The aim of the book is to make the important point - simple in its core and complex in its detail - that architecture is incredibly closely related to human energy harvest. We are at a point where we need to change that radically and, therefore, we need to understand it as well as we can."

The audience for the book, however, is not limited to the profession. There is a real focus on making the book and its message as accessible as possible. On a practical level the choice of publisher - Pelican rather than one of the many academic publishers who place exorbitant prices on their publications - ensures that it will always be affordable. Within the text, the writer is careful to stay away from jargon when he can, and when it is unavoidable a brief explanation is given. Right at the beginning, the concept of the kilowatt hour is introduced along with how this equates to a day of human labour; approximately 0.075kW for an hour of work. The consistent use of this metric throughout very quickly contextualises the building being discussed, and I frequently found myself flicking back and forth to directly compare buildings; how does the Barbican compare to the Parthenon in embodied energy?

In this spirit, the book uses a series of beautifully delicate and expressive drawings of the buildings. The author explains that this began as a practical solution in that, as the book aims to be as affordable as possible, the physicality of the book didn't lend itself to the reproduction of high-resolution photographs.

"What I wanted was for the book to have the pleasures of a sketchbook rather than that of a beautiful coffee table book selling for sixty quid, so I started to think about line drawings as something that prints very well on cheap paper."



From this, something unique and highly effective emerges. Each drawing is to scale relative to each other, meaning that the size of each building is very simply but effectively contextualised; the hunter-gatherer hut barely the height of an individual line of text, while Drax Power Station dominates a largely text-free double spread.

"Part of the agenda of the book is to get to people outside architecture. When describing scale to the lay reader you're expected to use double-decker buses or the area of Wales. I didn't think that suited this purpose. The illustrations allow you to flick through and see, for example, how small the Parthenon is compared to Modernist industrial buildings. It makes the distinction between big and other sizes of big."

Barnabas Calder's journey to writing this fascinating new book contains lessons in and of itself; in 2016 he published a book titled "Raw Concrete: The Beauty of Brutalism." The carbon-heavy extravagance of these iconic structures is well documented and the apparent contradiction in message between his first and second publications was raised in the Q&A following the online launch event for his new book. This, however, is unfair given that the introduction to Raw Concrete contains the sub-heading "Architecture and Energy", with this brief section almost reading as an abstract for this new volume; the second book nested within the first. Barnabas explained how writing the first book lead the revelations which fuelled the follow up.

"As I finished 'Raw Concrete' in 2015 I spotted what I wanted this new book to be about. I told my editor about the new idea and he suggested including something in the introduction. I was essentially an aesthete historian, but once I started reading up on the history of energy and how this had interacted with architecture, I very rapidly realised that we had to stop building in new concrete and preserve Brutalist buildings; we simply can't afford to waste their embodied energy."

The analysis of this historically recent yet contextually distant movement in architecture lead to a profound realisation, something which the new book successfully recreates with a broader range of architectural styles and eras.

"I came to realise that the current level of crisis of architecture – that we are not moving anywhere near fast enough to achieve zero-carbon – was the big story of our architectural period."

This unprecedented understanding of the history of great buildings and the civilisations that created them is incredibly effective in demonstrating how much we take for granted in the modern world. It is striking how a careful balance was struck between humans and their energy systems in pre-modern times and yet in the contemporary world we have developed scientific processes capable of expressing the need for this balance in incredibly compelling ways, and yet we continue to consume this energy at an exponential rate and can't imagine living any other way. I asked the author for his take on ancient people's lack of awareness and ability to strike the balance as compared to our own knowledge of the issues yet apparent inability to exercise the necessary restraint.

"Humanity was and is a constant search for and exploitation of energy. Ancient peoples had a set of customs woven around their energy systems. Self-restraint was put into terms of religion, practices and beliefs, the upshot of which is that they find a form of stability. That either arose from mass extinctions or indicates that groups copied and shared ideas with neighbours to mean that most adapt rather than die."

"The problem is that we are a single world culture, and it's a fossil-fuel culture. Most of the historic changes in the book are related to energy increase. Where they decreased – as at the end of the western Roman Empire – that involved death and suffering resulting from the reduction and simplification of almost every form of human activity. We have the potential to do it in a more orderly way, but also to do it in a much worse way; by wiping out ourselves and most multi-cellular life on earth with us."

Over the two parts of the book, Barnabas Calder clearly demonstrates the connection between buildings and energy, and also the connection between the rise and fall of empires and civilisations. The frightening acceleration of progress demonstrated in the second part of the book is at once astounding and alarming. Even the poorest in our current society benefit from products of energy wealth beyond the imaginations of any of the richest leaders featured in the first half of the book, and yet it is obvious that the speed of exponential growth cannot be sustained for much longer. The degree of change required will be uncomfortable, and yet we have a precedent relating to a huge level of change within the built environment in our not-too-distant (in terms of the timespan of this book) past.

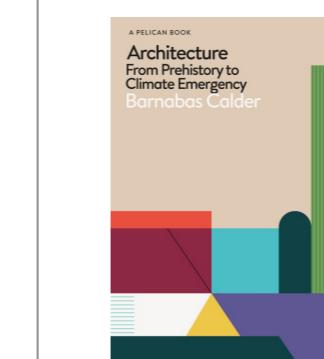
"Look at the speed of change in London architecture after the 1666 fire; pre-1600 construction methods disappeared overnight and there has never been another big fire in

London until major deregulation caused the Grenfell tower disaster. The entire way people built changed overnight after the Fire of London, through regulation. It's perfectly doable; the building industry is very impressive in its ability to adapt and improve processes through competition provided the regulations makes sure that the race to the bottom on price isn't the only target."

The scale of change required, therefore, is far beyond the individual client, architect, builder, or project; it requires fundamental systemic change. What Barnabas Calder achieves is to clearly establish the links between energy and architecture, to describe how we became so energy-rich, explain how this has created a problem and outline how our current processes of building contribute significantly to that problem. Further than this, he demonstrates that, while change is inevitable, it is within our abilities to control the method of change without the upheavals of the past or the projected disasters of the future.

Architecture: From Prehistory to Climate Emergency achieves these lofty aims and does so quietly and calmly; at no point does the reader feel they are being shouted at. Rather, its success lies in a compelling, insightful and subtly written architectural history. This is an important work that deserves as wide an audience as it can reach. ◎

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