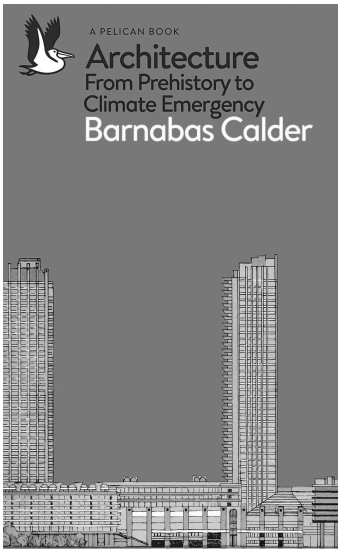
time make up the fixed stage upon which the events of the perceivable world take place on, Einstein proposed an alternative with the theory of relativity, which states that space and time are not fixed coordinates. Following this parallelism, we could easily argue that land is not a fixed stage upon which we act, instead being relative to human activities and needs, as continuously demonstrated by recurrent events such as desertification and deglaciation, historically driven by human actions which mine the fragile equilibrium of the Earth.
The technical lands are also the result of jurisdictional action, a theorization of places where global practices of knowledge and aesthetics converge to concretely transform the physical geography of the territory. These landscapes indicate a variety of sites with special legal status, especially in relation to the non-human world. They show a diverse nomenclature and include exclusion sites, administration, regulation, demilitarized zones, space bases, and sites of extractive industries and military bases, to name but a few.
A prime example of this is the Waste Isolation Pilot Plant (WIPP), located approximately thirty miles northeast of Carlsbad, New Mexico. Purposefully crafted, WIPP serves as the ultimate repository for nuclear weapons industry byproducts, housing materials tainted with plutonium and transuranic elements. Its core role is to safely contain and isolate radioactive waste until it ceases to be a threat. Beyond technical intricacies, understanding WIPP requires navigating a complex legal landscape made out of regulations that govern its every aspect. Moreover, lands become technical even through the complex mechanism of systems that allow their exploration, visualization and comprehension, such as GIS (Geographical Information System) or remote sensing and satellite views. *Technical lands*, epitomized by sites like WIPP, the 1848 Union Stockyards in Chicago, the Detention Prison-Building built in the Abandoned Mine Lands of Appalachia, and all these operations exert a transient influence on their environs. Outflows, smokestacks, and buried materials undergo transformations affecting soil, groundwater, and wetlands. These radioactive domains instigate environmental changes necessitating extended chronologies, often surpassing the scale of a single human lifetime. What all these examples bring to light – just like all the other parts of the book – is how areas designated as human exclusion zones emerge as sanctuaries for the non-human, ushering in a new classification of lands: and that absence is even more present in the pictures here collected where every form of life appears even by mistake.
The reflections presented in both volumes converge towards a functional definition: as the scope of infrastructure expands from local to state, from national to international, they emerge increasingly as technicalities. A kind of extension of influence is projected onto the planet, outlining the *anthropocene* as the recognition of our transforming of the sea, the atmosphere and the earth into technical entities, lines and infrastructure, with increasingly obvious consequences. Treating nature as an object means a transition from its ornamental role to an active one, where it functions as a contributing device to human life, parallel to artificial constructs. Infrastructures have entered current urban planning discourse as a strategy that supports territory's progress towards achieving environmental conservation, sustainable development and urban resilience. These kinds of infrastructures are not merely understood as machines of supply and transmission but as elements made of folds, temporalities, ecologies characterized by inherent fragilities, dispositifs which act through a different set of action.

Sofia Leoni
Politecnico di Torino

Barnabas Calder, *Architecture. From Prehistory to Climate Emergency*. Penguin, 2021, 547 pp. Paperback: € 18,52 - ISBN 9780141978208



Architecture. From Prehistory to Climate Emergency by Barnabas Calder begins with an insightful observation, namely that "the construction and running of buildings are currently responsible for 39% of all human greenhouse gas emission." (p. XI)
This sentence works both as a *memento* and as a *leitmotiv* of a text whose alternative title could be: *Architecture Reduced Under the General Concept of Energy*.
The underlying intentions of the author are highlighted immediately, in an introduction that admits the will to instill a different thought about why we create buildings and give consistency to our urban projects. In the first chapter the author's tone expresses a certain concern for the future, which becomes more enthusiastic and optimistic in the last part of the book: here, he tries to raise a sense of responsibility within the building sector that frequently does not do enough to move towards

sustainable energy consumption.
The book is divided into two sections. Part One investigates the events between two fundamental energy turning points: that of the Agricultural (or Neolithic) Revolution which occurred around twelve thousand years ago in the lands of the Fertile Crescent, and that of coal during the European seventeenth century. Afterward, Part Two moves from "the march of bricks and mortar" (p. 197) in eighteenth-century Georgian London to today's Chinese megalopolis. Unlike the first one, almost all of the themes of the second section concern Europe and North America, as they were the first regions of the globe to be industrialized: "Their architectural response to fossil fuels was often the earliest and was frequently, thanks to the economic and colonial power that accompanied it, influential on other parts of the world." (p. XXIII)
The central focus of the discourse is *energy*. In particular, Calder concentrates on the concept of embodied energy, that is, the total amount of consumption necessary for something to be produced, processed and put into service. Embodied energy is such because it is effectively hidden from our sensible experience. It is the perishable trace of history *par excellence*. Calder could be considered one of the first to attempt a narrative of architectural events starting from what can no longer be seen: the energy that has been made necessary to build them and make them work. Nowadays, this effort functions as a fundamental integration to the other various historical narratives already present.
Here, from the times of Uruk (3.500-3.000 b.C.) to those of the European seventeenth century (the so-called "agrarian millennia" of Part One) humanity tried to transform the context to maximize the quantity of useful energy that it managed to obtain from cultivated fields and from the woods, as well as from waters and winds. During this era, the amount of soil for energy production was a direct contender to that necessary for food supply: fate and the prudent use of these resources periodically led a group to prosper significantly, "but every boom was followed by decline or bust, as the remorseless cycles of crop fertility and changing climate imposed scarcity and instability." (p. 193) If the energy required to construct buildings was expensive and difficult to implement, the amount required during their life cycle was minimal. With the large-scale introduction of fossil fuels like coal, oil and natural gas, the price of materials and construction sites collapsed, but the related energy consumption grew exponentially, reaching today's peaks also caused by the fact that in the meantime the world population has increased tenfold. Following this reasoning the main concept of the book emerges: "The wonderful buildings of Modernism were the very antithesis of everything that sustainable architecture needs to become: they gloried in profligate heating, cooling, ventilation and lighting systems, in [...] energy-hungry materials, in car-based cities." (p. 446) In short, it was a season of incredible fossil-derived energy surplus that has contributed crucially to the ecological crisis that we are called to face nowadays – and which we can no longer indulge in.
In further analysis, Calder assumes a sort of cross-eyed posture: while one eye retraces the fundamental stages of the history of architecture in an exhaustive, all-encompassing and not purely Eurocentric manner, the other one remains fixed and sensitive to our present world, within which the energy theme is decisive and fundamental. Any projection of ours, going forward or backward, cannot ignore the situation in which we are immersed and living. So, having that every historical narrative is as if it (also) speaks to us in the present tense, *Architecture. From Prehistory to Climate Emergency*, ultimately, could and should be considered as a possible meta-design tool for the contemporary project. In doing so, what is referred to throughout the text is not something constrained in itself, the architecture as a substance, but rather a relationship between architecture and energy. From this, the work has to be considered very meaningful for two main reasons. Firstly, for being destabilizing and overturning compared to the most widespread historical narratives: in fact, the energetic point of view allows us to see a further face of the potentially infinite polyhedron of the history of architecture. Secondly, it is so because it takes inspiration from present energy issues, which have a crucial role in today's discussion around the ecological-environmental problem. These expedients offer new and valid ideas and references for the present and the near future project: this is why "as architects and technicians come to consider the great energy change that faces us all – decarbonizing our built environment –, architectural history needs to lead the discussion." (p. 445)
All this, finally, also to go behind and beyond the forms of architecture and to reformulate the modernist belief of "form follows function", expressed firstly by Louis Sullivan and later became a popular mantra, replacing it with a more updated (and maybe sincere): "form follows fuel." (p. 291)

Tommaso Antiga
Università degli Studi di Trieste