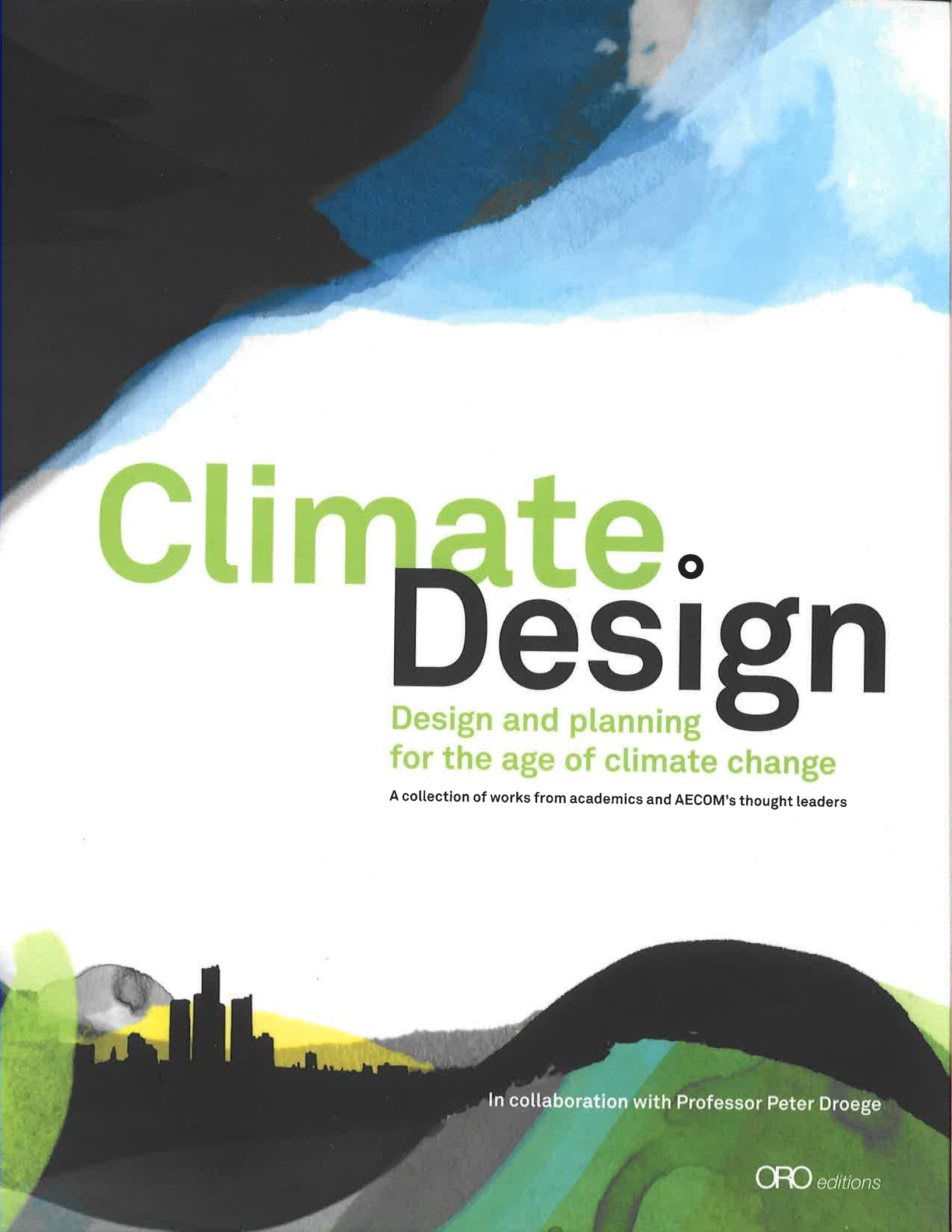

Climate. Design

Design and planning for the age of climate change

A collection of works from academics and AECOM's thought leaders

In collaboration with Professor Peter Droege

ORO editions

Revolution of practice

Joe Brown

Ancient civilisations had no doubt that natural forces held sway over the lives of humans. Early societies lived in close rhythm with the ebb and flow of the natural world, knowing they would face nature's ferocity if they dared cross it. Only in modern times, when we had steered rivers, levelled wilderness, moved mountains, and erected vast cities, did it become possible to believe that we alone designed our destiny. The twentieth century saw such feats of science and technology—splitting the atom, walking on the moon—as to make us believe that any increase of the dominion of human will was positive progress.

Fifty years ago, a few thinkers knew this was not the case. Witnessing the wanton attitude with which twentieth century society consumed land and resources, they foresaw a time of reckoning. In 1960, Garrett Eckbo warned, 'the most important issue that faces all landscape architects, environmental planners, and designers in the twenty-first century will be precisely the integration, perhaps by shotgun, of current economic and political thinking with ecological reality'.

Fifty years later, we need look no further than a devastated New Orleans to know that we have not conquered nature. It would no longer be sufficient to heed the warnings of Eckbo and others; the time when we might have averted climate consequences has passed. We now face a world thrown out of balance by our actions. Sprawling development consumes land, energy, and water at unsustainable rates. Buildings and cars spew carbon into the atmosphere. Open space and biodiversity dwindle before the onslaught. Temperatures and sea levels rise. In the first decade of the twenty-first century, we have begun to see the violent consequences of our disregard, as the sea begins to devastate coastal cities without warning.

Sprawling development consumes land, energy, and water at unsustainable rates. Buildings and cars spew carbon into the atmosphere.

The climate crisis stems from a crisis in our built environments, which are suffering from a lack of holistic thinking. Many perspectives shape the built environment, but all too often, each one looks to its own goals and methods; the collective system is the focus of no one. The only way we can make a real difference in our impact on the global environment and climate is through a holistic approach to policy, planning, engineering, and design, wherein all work collaboratively toward the common goal. That goal must be the functional integration of built and natural environments. Built environments should be viewed as the extension of natural environments, allowing natural systems to function and working with these systems in high-performance buildings and landscapes. At the same time, we must not lose sight of our goals of economic productivity and social equity.

Infrastructure refers to the technical solutions that aid the flow and movement of society, granting water, energy, and mobility to large populations. When we think of infrastructure, we think of roads, bridges, transit lines, airports, power lines, and wastewater systems. We think of hard, built things—the things we can thank for the lifestyle to which we are accustomed. We have great respect for this realm. Nature is an afterthought by comparison. We might rather gaze upon a forest than a maze of power lines, but we know what the power lines grant us. We don't quite know what the forest is doing for us.

But we should—because we know that long before we conceived electrical grids, life on Earth was drawing all of its power from the light of the sun. Long before we built wastewater systems, the natural hydrological cycle was functioning. Every moment, we breathe oxygen that is produced by trees. Nature works. It can work with us, and it can work for us, as long as we make room for it and design built systems that cooperate with it. It's time to think of natural systems as green infrastructure.

A hundred years ago, when we decided to develop a tract of land that included a creek, we would have taken pride in our ability to encase that creek in pipes, bury them, and build on top of it. It's time for a new kind of pride—in our ability to think functionally about natural features and creatively about their incorporation within built environments. A creek running through the midst of a city is a sought-after experience for people; it's a habitat for species, and it's green infrastructure.

Not only must we design a future in which our built environments are not at odds with nature: we must introduce immediate interventions that protect our cities from the consequences we have already incurred. As Victor Olgyay wrote in 1963, creatures must, if they cannot physiologically adapt to changes in the natural environment, prepare what defence they can. In some cases this will mean built structures that will resist the sea. In most cases this will mean new planning strategies that regenerate our settlements so they are not in contention with changing natural forces.

The only way we can make a real difference in our impact on the global environment and climate is through a holistic approach to policy, planning, engineering, and design, wherein all work collaboratively toward the common goal.

Climate infrastructure will be the systems that enable this regeneration. Imagine a waterfront park. It is a place for people, a place of attractions, a place of economic activity, as well as social inclusion and cohesion. It includes wetlands and naturally processes water. It includes solar panels and harnesses energy. It is highly walkable and encourages a healthy, zero-carbon lifestyle. And at the same time, its design features double as defences against a rising sea level.

Something as complex as climate infrastructure—integrated systems that deliver a variety of functions while having a net positive effect on our environmental footprint—requires an interdisciplinary approach. Environmental and ecological professionals must determine performance targets; planners must form a strategy for meeting those targets while meeting the demands of conventional infrastructure; and designers must realise this strategy in built form, knitting it within social fabric.

These types of interventions require more than crossing the boundaries of disciplines. We must also cross the boundary of public and private, and we must cross boundaries between agencies. Government must learn to address all of the issues that intersect in the land and community in a manner that promotes holistic solutions. The design and planning profession has the responsibility to raise awareness of this need and demonstrate ideas that will spur the concerted response that is necessary.

We must accelerate the response. It's time for the most innovative techniques in design, planning, and engineering to come together with forward-thinking policy. Without this paradigm shift, we face a planet that will become unliveable. With this shift, we can create cities that will be organs of environmental equilibrium, mitigators against climate change, and healthy places for people to live.

Our path of progress has led us back to the knowledge we once possessed. As modern humans, armed with the scientific understanding to forge great cities, we stand alongside our ancient ancestors in knowing that our lives are inseparably linked to the oceans, the forests, the skies and stars.