

# Tracing Environmental Transformations: A Study of the Anthropocene and the Great Acceleration

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**Abstract:** The great acceleration is an environmental history of human-induced alterations from the historian's perspective. It uses statistical data, descriptive examples and short introductions to support the evidence. The book is divided into four chapters: energy & population, climate and biological diversity, cities and the global economy and the Cold War influences and environmental change. The combination of themes has no obvious reason. However, the author uses them effectively to narrate their story by citing many historical incidents characterising human-dominated landscapes that changed the world. This book encourages the interaction between the anthropocene and the great acceleration that has affected not only Earth's climate and environment but also the evolution and survival of everything else on Earth. This book makes a compelling read for architects, planners and environmental designers. Their contribution and participation in shaping the natural and built environment are less prioritised. The author seems primarily concerned with the idea of the carbon cycle and fossil fuel-driven changes in the global economy. Consequently, it provoked questions about how these disciplines influence the built environment and climate change.

**Keywords:** Climate change; Built environment; Human-dominated landscapes; Environmental design; Land use changes; Human settlements.

## Introduction

“The Great Acceleration” is an environmental history book that narrates the extensive transformations of the world's environment from a historian's perspective. This book stimulates discussion of environmental issues supported by descriptive events. This book addresses several topics, such as energy and population, climate and biological diversity, cities and the global economy, and the Cold War's influence on global climate change. This book focusses on the contributions of architecture, planning, and environmental design to shaping the natural and built environment. As a result, it emphasises technology-driven stages that are likely to lead to future dependence on climate change. The present work analyses the themes presented in this book and its role in

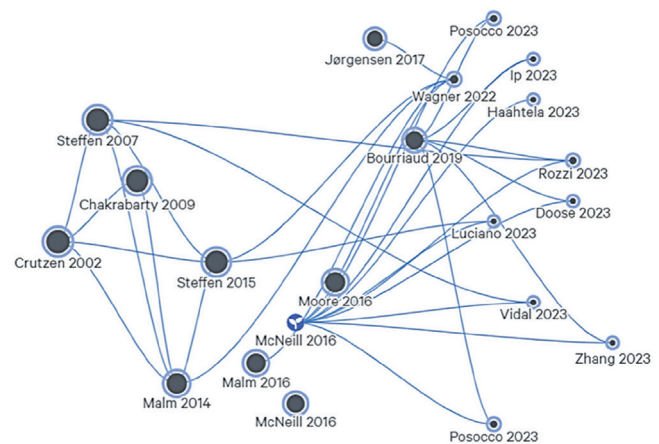
the extensive tracing of environmental transformations worldwide. Consequently, it traces the environmental history and reflects on the reasons behind the neglect of design and planning disciplines.

A literature review is conducted to support this review work and identify the relevance and importance of this book in the field of the built environment. This literature review includes previously published studies and studies citing the book “The Great Acceleration” to assess the effectiveness of design disciplines in interdisciplinary environmental design research. For this purpose, a meta-analysis is used to review the effectiveness of design disciplines in mitigating climate change by combining multiple studies on the same topic. For instance, one study found that incorporating design disciplines into interdisciplinary research

increased the likelihood of developing climate-change mitigation strategies by 30%. This allows for a more comprehensive and in-depth understanding of climate change's current state and the effectiveness of design disciplines at addressing it. This literature review is illustrated graphically by a seed map. "Seed Maps shows the top-related articles to a single inputted seed article" (Dixon, 2023). This graphical representation offers an easy interpretation of the influence this book has on the literature landscape. Each circle represents a paper and its connection to this book. As depicted in Figure 1, the size of the circle indicates the relevance of each paper with respect to the seed article which is the book (*The Great Acceleration*). The articles that date from 2002 to 2015 provide a background critique of the Anthropocene narrative that supports this article. On the other hand, the article dated between 2016 and 2023 represents the most relevant works citing this book. Jorgensen (2017), for instance, is one of the many book reviews on the great acceleration. In this review, he discusses the "technologically augmented activities of humanity" (Jorgensen, 2017). Similarly, the article by Ip (2023) focusses on "planetary health, and the article by Wanger (2023) debates the "socio-political transformations".

Based on this literature review it is understood that the book "*The Great Acceleration: An Environmental History of the Anthropocene since 1945* by J. R. McNeill and Peter Engelke" is significant in the field of interdisciplinary environmental research with numerous citations and various reviews underlining environmental concerns. This book is an essential resource in the fight to understand and address the environmental challenges of the Anthropocene, highlighting the urgent need for action. The book is highly acclaimed for its comprehensive study of human-environment relationships over the past 70 years. It is credited with being a major contributor to the growing field of interdisciplinary environmental research. It provides a comprehensive overview of environmental changes since 1945 and offers insight into current and future environmental challenges. Despite being highly acclaimed, the role of the built environment and design disciplines in mitigating climate change has been neglected in this book. This is similar to the neglect identified in other research papers during the literature review conducted for this paper. For example, while Ip (2023) and Wanger (2023) both discuss the importance of transforming our cities, they do not explore the role of architecture and urban design in creating climate-resilient cities. Additionally, the 2019 study found that

the built environment accounted for 39% of global CO<sub>2</sub> emissions, yet the majority of climate change research is focused on the energy sector. This omission is concerning as the built environment is responsible for a significant portion of global carbon emissions. As a result, the book review presented in this paper will draw attention and contribute to the understanding of design disciplines that play a critical role in shaping the natural and built environment. It will emphasise the urgency of action required to address climate change through design disciplines and offers dialogue and discussion to highlight the integral role of design disciplines in mitigating climate change.



**Figure 1: Seed map for literature review (created by author using selected papers in Litmaps visualisation tool).**

## Methodology

The methodology of this paper primarily consists of a critical analysis of the book "*The Great Acceleration*" by McNeil & Engelke. The analysis includes an overview of the book's main themes, arguments, and evidence. The methodology involves a close examination of the author's perspective on the Anthropocene and the Great Acceleration. It also examines their contribution to the current and future environmental crisis and the dilemmas posed by climate change for the built environment and design disciplines. The analysis is based on the use of secondary sources, such as academic articles, journals, and books, as well as the author's knowledge and expertise in the field of environmental history, architecture, and planning. The paper employs a narrative approach to describe the book's main arguments and themes in a clear, concise, and critical way. The methodology also includes an exploration of the strengths and limitations of the book

and its potential implications for future research in the field. The paper concludes with a critical evaluation of the book's contribution to the ongoing debates on the Anthropocene, environmental history, and the built environment, and outlines areas for further research.

### Discussion

A central theme of the book is the debate between the Anthropocene & Great Acceleration, which takes an optimistic view of technology in the near future. Throughout the book, emphasis is placed on technological innovations & interventions limited to energy and fossil fuel extraction. McNeil & Engelke argue for emission-reducing & diverting technologies as potential solutions for the future. As a result, human environments are improved at macro and micro scales regardless of additional technologies. As an example, architectural innovation has improved living conditions through technological innovation, which has resulted in better application and acceptance of climatic patterns. As a result, a soulful perspective that captures the whole essence of technology and its role beyond supporting and catering to the energy domain is largely overlooked in this book. This leads to a lot of introspection to find out what was built that shaped the environment. It also explains how and why it wasn't a priority to be acknowledged in environmental transformation.

In this book, the author paints an innovative image of the world under the shadows of the Cold War, which rippled through the natural & political landscape of the time. Using the Cold War as an analytical tool, McNeil & Engelke assess the environmental state of the world. This was propelled through the phase of the human desire to control the future and drove their attention towards the historical mapping of the earth's climate systems. This human quest eventually led to the significant discovery of the ozone hole. This revolutionised the idea of climate change by bringing environmentalism to the center stage of global political and public concerns. It is noteworthy that the discussion of environmentalism pertains to its evolution from intellectual perspectives to socialist and capitalist ideologies. This results in agencies like EPA, IUCN, WWF, and UNEP. On this basis, the author claims that the Cold War had moderate side effects in terms of health and environmental impacts. This contradicts the portrayal of destruction witnessed due to climate politics and the dominant idea of "Cold War Secrecy" during the Cold War. This idea highlights deliberate neglect by political leaders towards their people and

environments. As a consequence, it highlights and questions the Anthropocene's desire, leading to self-introspection about human dishonesty, justified because the Cold War motivated economic self-sufficiency at the cost of sacrificing natural resources and areas.

Throughout the book, McNeil & Engelke portray sacrificed natural areas as zones of exclusion, sacrifice, and combat. This representation generates a lot of curiosity regarding the Cold War footprint on land use changes across the globe. The identification and representation of these environmentally degraded zones across the world are intriguing, as few of them are even called dead zones and ghost zones. Design disciplines must look into deeper details about the extent of human dominance that altered world landscapes and how these landscapes impacted dependent human settlements and their survival through these representations. For instance, in the past two decades, the Aral Sea in Central Asia, once the world's fourth largest lake, has been reduced to a fraction of its original size due to the overuse of its tributary rivers for irrigation. This has had dramatic ecological and economic consequences, with the Aral Sea becoming a desert wasteland and local fishing communities devastated. This serves as a stark reminder of the power of human intervention and the need to consider the long-term impacts of human actions. Using this inquiry, we can examine how human behaviour has influenced the environment and how environmental changes have impacted human settlements. Using this knowledge, we can create strategies that will restore landscapes and create sustainable living environments.

### Analysis

The idea of human settlements is again subdued as a subject matter, behind the global pace of industrial and secret cities which gained prominence as a byproduct of the Cold War. Starting from port cities to industrial mega cities, the cities are referred to as trading economies, burgeoning economies, immigrant-led economies and automobile suburbs as the quantified expression of the image of cities restricted to "iconic & global symbol of suburbia" (McNeill, 2014, p. 121). The image of cities projected in this book is clearly indicative of McNeil & Engelke's understanding of economies governed by consumer economies rather than ecological economies or any other economies concerned with the natural environment. These consumer economies shape human environments to address the Anthropocene's desire for urban wealth & comfort instead of environmental sustenance or sustainability. They present an engaging

argument on the evolution of cities, but they do so only through exceptional environmental innovations that occur at a city planning level. According to this argument, cities and their planning implications remain incomplete when maintaining environmental equilibrium and natural environments.

The book offers a moderately informed analysis of environmental disruptions affected by Cold War imprints on water resources. It cites cases of melting glaciers, flooding, droughts, reduced water supply, health impacts due to polluted water sources, and declining water bodies, etc. All of which eventually builds up the case for the impact experienced by the larger ecosystem and the settlements called downstream communities on these water sources. But the scale of these communities and settlements and the extent of environmental damage remains unclear. Population and biodiversity have also been inadequately explored, without providing a broader perspective and a clearer picture of how these issues affect ecosystems. This lack of data and research has created a knowledge gap, hindering the ability to make informed decisions and take effective action on the issue. It is essential to research and understand the effects of industrial activities on the environment and their downstream communities. Without this information, it will be difficult to address the root causes of environmental degradation.

### Conclusion

As understood from the above, the book doesn't explain the start of the Anthropocene but rather takes a more recent date, post-1945, referred to as a great acceleration. Due to the absence of a defying definition of the Anthropocene, it avoids offering any solutions to the Anthropocene effect problem. On the other hand, it offers a comprehensive & intriguing synthesis of world environmental history. This makes it extremely useful for all disciplines interested in the extensive tracing of environmental transformations worldwide. It also makes a compelling choice for those interested in developing perspectives on overlooked areas of design research. This book not only stimulates discussion on environmental issues but also provides a critical and informed analysis through descriptive events. McNeil & Engelke convince about the technology-driven stage of great acceleration. It establishes the book's argument that global climate dependence is reliant on alternate energy

systems while putting environmental conservation and stewardship on parity. Additionally, it places technology in a leading role and opens up international debates over the Anthropocene's aspirations regarding climate change future. As a result, it highlights the essential role of designers, builders, planners and policymakers in mitigating climate change. It also emphasises the urgency of the action required to address climate change through design disciplines. By emphasising the need for action, it puts the power in the hands of those who can create meaningful, tangible solutions to climate change. It also allows us to look beyond the traditional boundaries of design and encourages us to think about the broader implications of our solutions.

### Declarations

The authors have no competing interests to declare that are relevant to the content of this article. Data used is available through references cited in this paper. The responsibility for the content and any remaining errors remains exclusively with the author.

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