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Queensland University of Technology

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Nation by Design by Nature

Relational Urbanism and
More-than-Human Futures

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An aerial photograph of Singapore's city skyline, showing a dense cluster of skyscrapers in the background and a mix of high-rise residential buildings and green spaces in the foreground. A blue grid pattern is overlaid on the image, with a vertical line on the left and a horizontal line passing through the text.

CAN A NATION BE **DESIGNED?** |

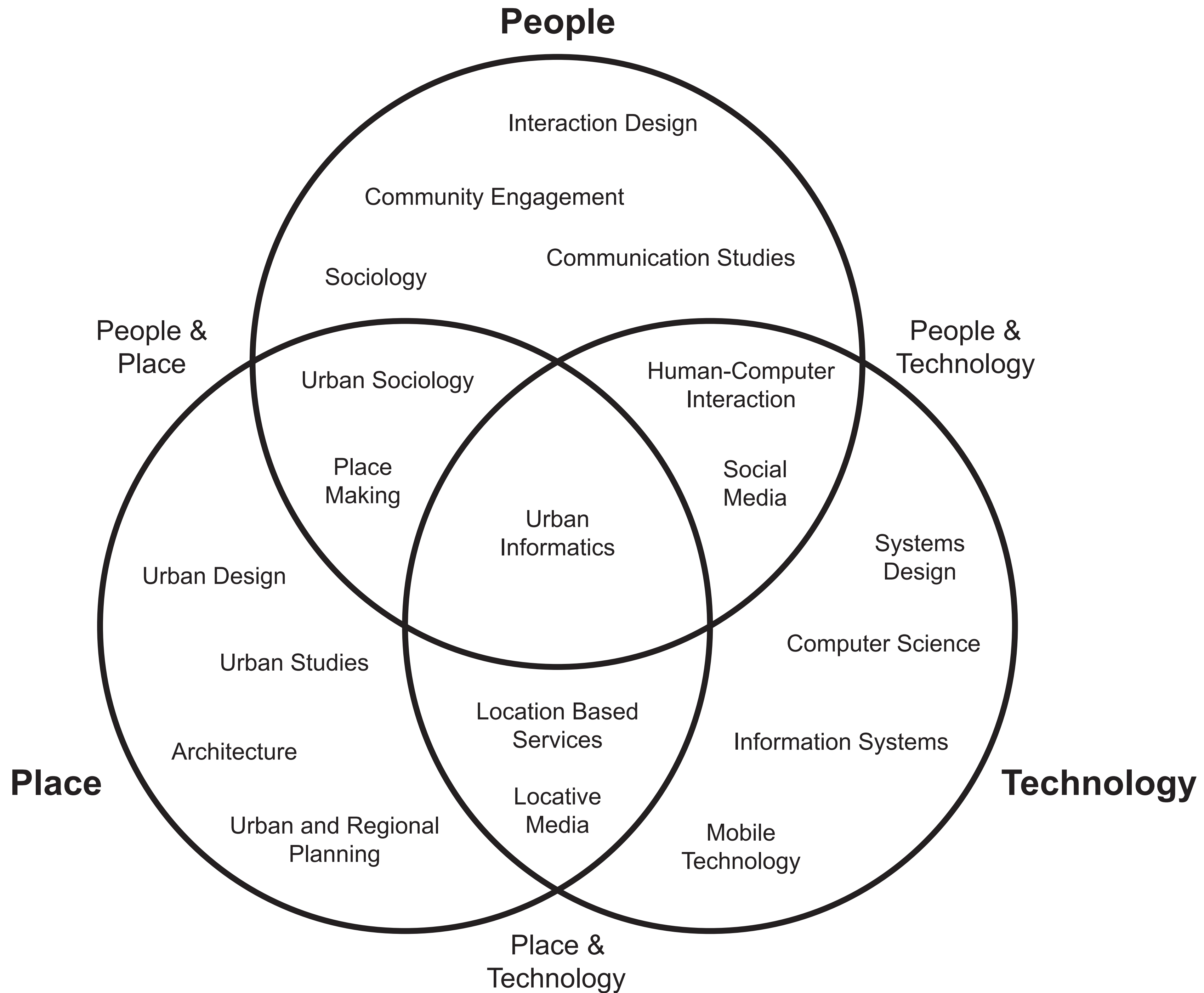
designsingapore.org/nationbydesign

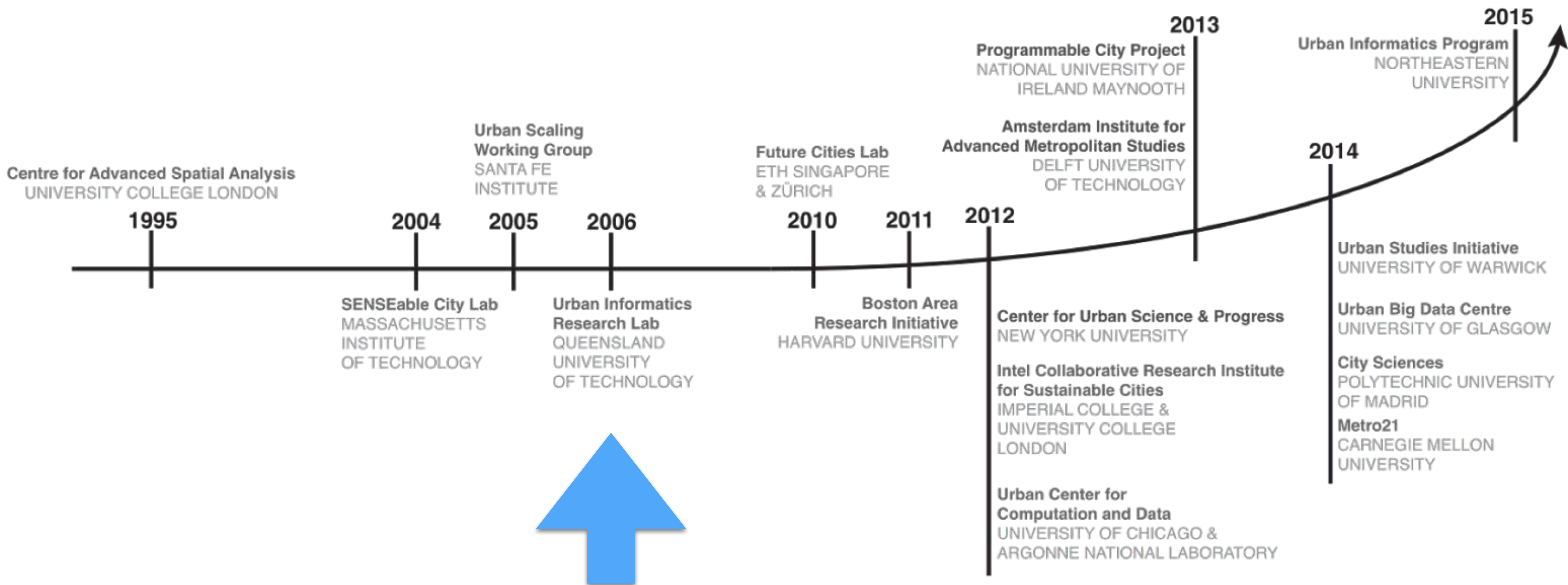
1.

Introduction

Once upon a time in 2006...







Marcus Foth
Martin Brynskov
Timo Ojala *Editors*

Citizen's Right to the Digital City

Urban Interfaces, Activism,
and Placemaking
Epilogue by Saskia Sassen

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Digital Participation through Social Living Labs

Valuing Local Knowledge,
Enhancing Engagement

Michael Dezuanni, Marcus Foth, Kerry Mallan, Hilary Hughes

Foreword by Tuija Hirvikoski



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II.

The Smart City









Global Mobility Index





Urban Design

Data Analytics

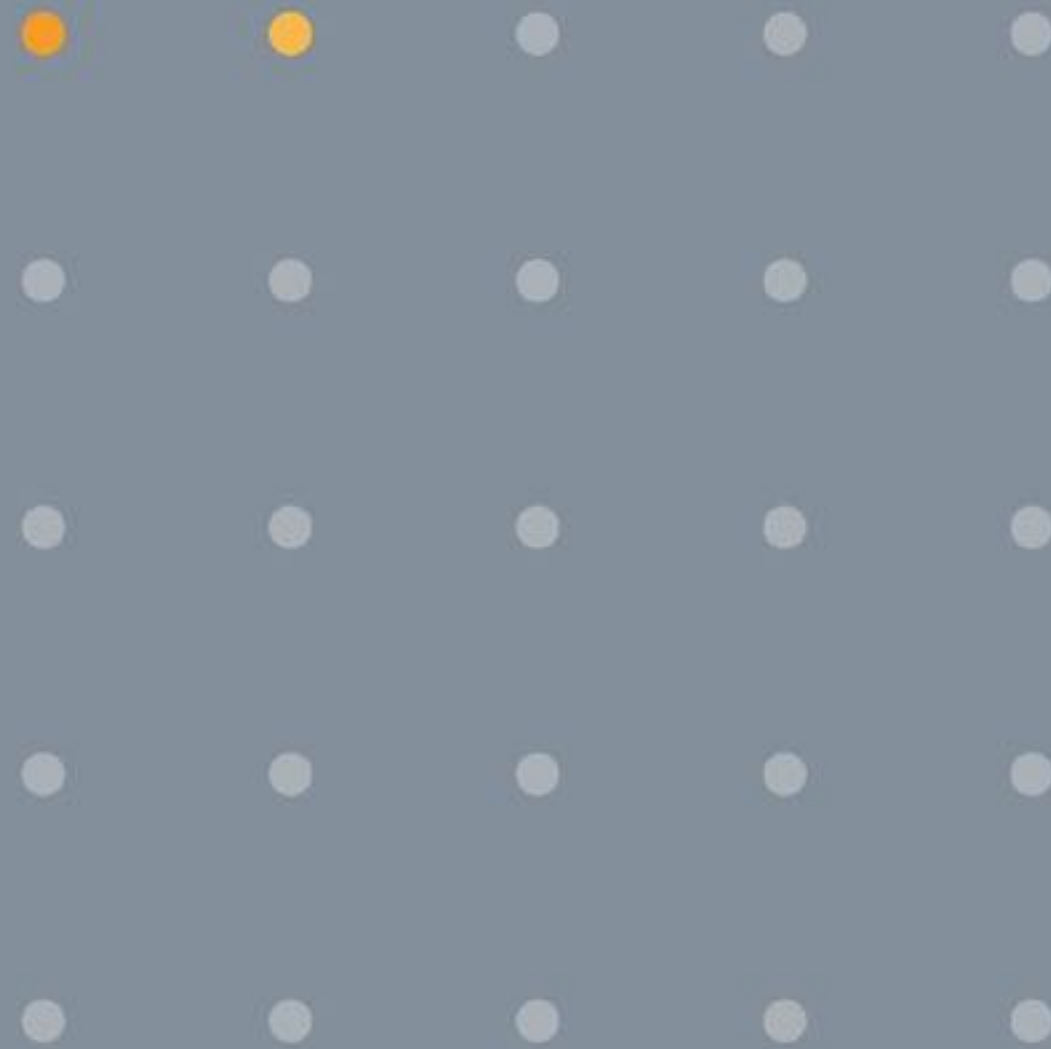






Technological Solutionism

A City Is Not a Computer:
Other Urban Intelligences
Shannon Mattern



Mattern, S. (2021). *A City Is Not a Computer: Other Urban Intelligences*. Princeton University Press.
<https://doi.org/10.1515/9780691226750>

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Gordon, E., & Mugar, G. (2020). *Meaningful inefficiencies: Civic design in an age of digital expediency*. Oxford University Press.
<https://doi.org/10.1093/oso/9780190870140.001.0001>



Journal of Urban Technology

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Towards Post-Anthropocentric Cities: Reconceptualizing Smart Cities to Evade Urban Ecocide

Tan Yigitcanlar, Marcus Foth & Md. Kamruzzaman

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To link to this article: <https://doi.org/10.1080/10630732.2018.1524249>

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III.

Design and Sustainability



Ruined by Design

How Designers Destroyed the World,
and What We Can Do to Fix It

Mike Monteiro

Foreword by Vivianne Castillo

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*... the world is working exactly as
designed. And it's not working very well.
Which means we need to do a better job
of designing it.*

ruinedby.design

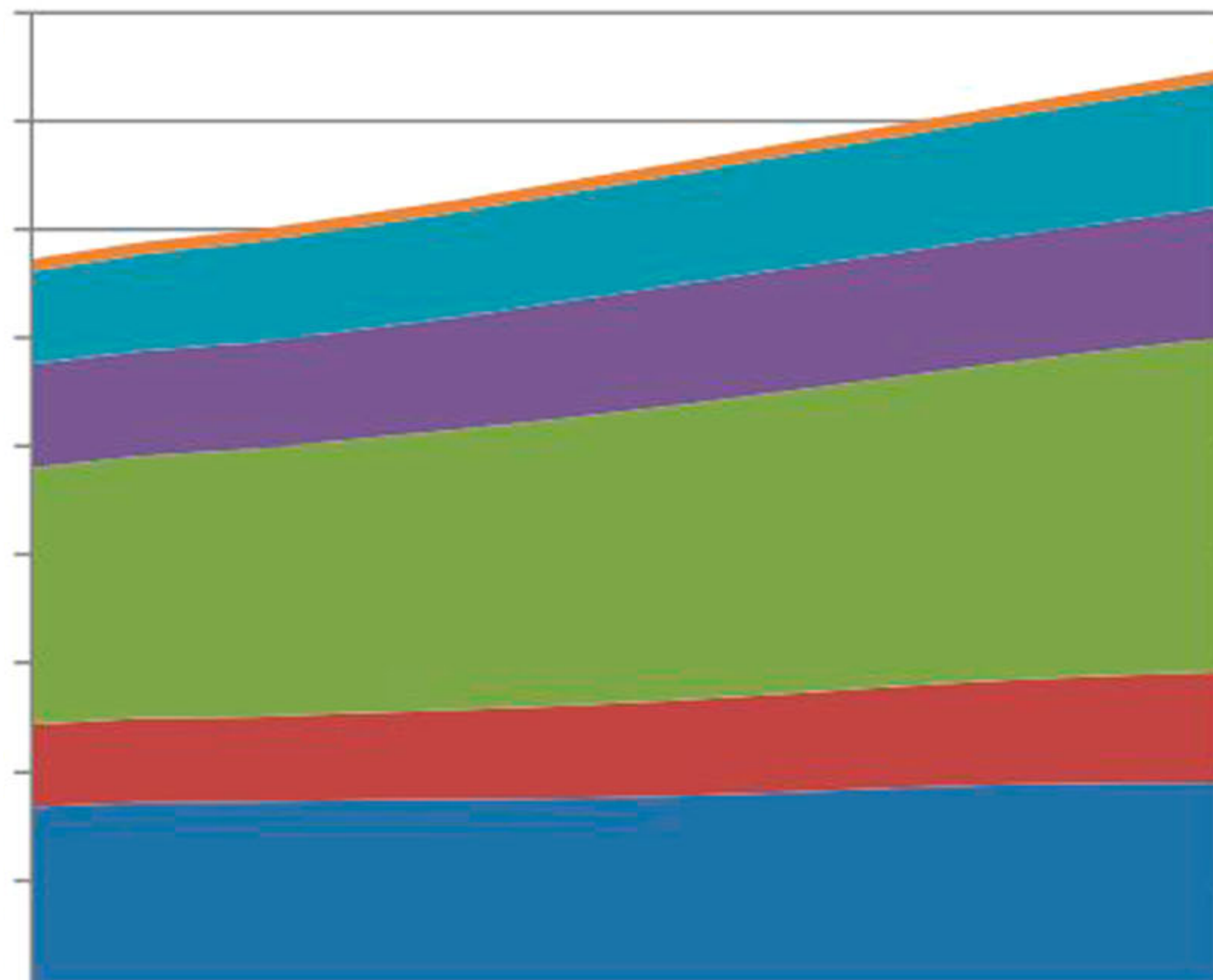






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Jevons paradox

Technological progress or government policy increases the efficiency with which a resource is used, but the rate of consumption of that resource rises due to increasing demand.

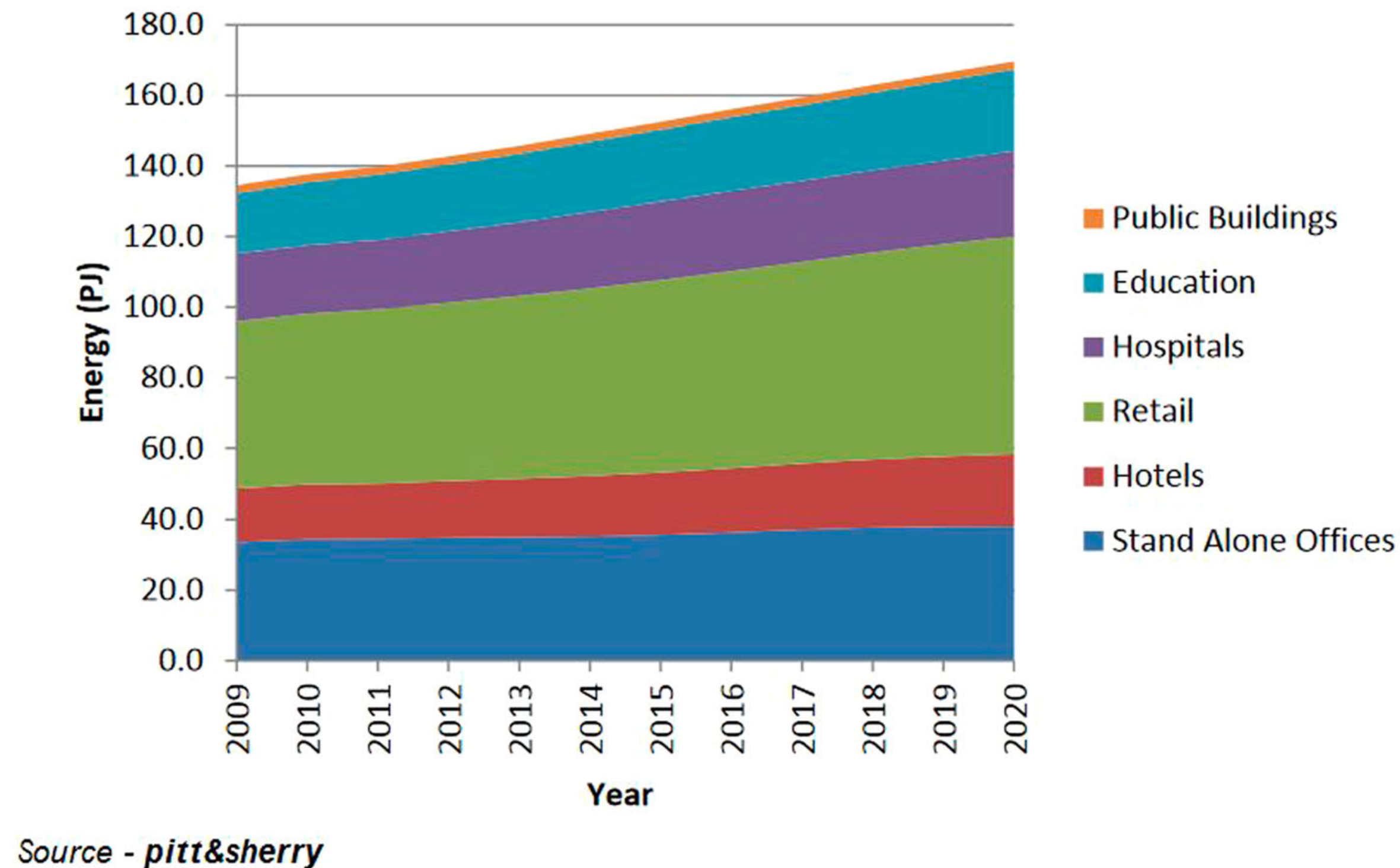


Figure 2. 'A baseline-energy-consumption-part_1-report' published by Department of Climate Change and Energy Efficiency showing an expected rise of total energy consumption of non-residential buildings by 24% between 2009–2020.

Loh, S., Foth, M., Caldwell, G. A., Garcia-Hansen, V., & Thomson, M. (2020). A more-than-human perspective on understanding the performance of the built environment. *Architectural Science Review*, 63(3–4), 372–383. <https://eprints.qut.edu.au/197359>



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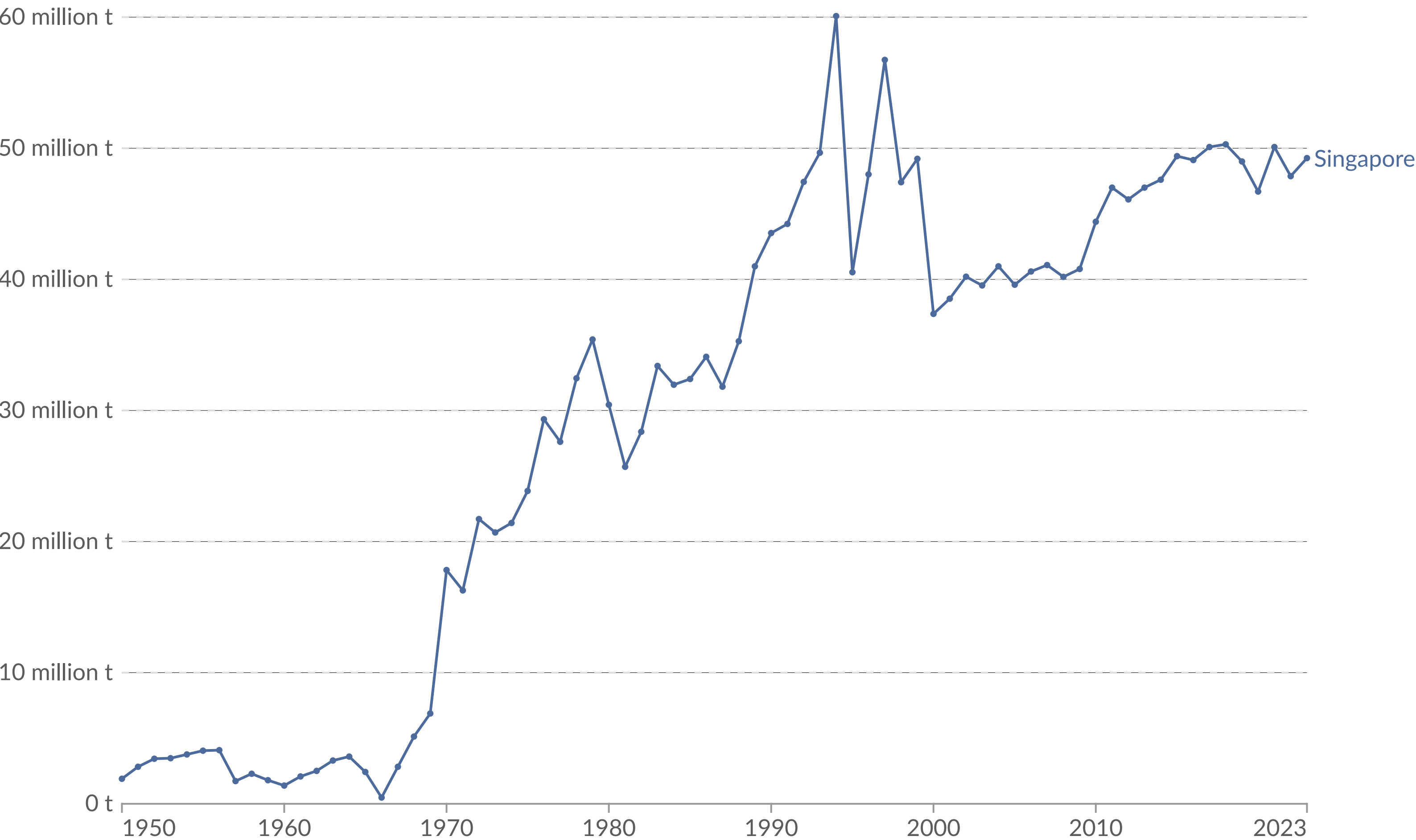
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climate change



Loh, S., Foth, M., Caldwell, G. A., Garcia-Hansen, V., & Thomson, M. (2020). A more-than-human perspective on understanding the performance of the built environment. *Architectural Science Review*, 63(3–4), 372–383. <https://eprints.qut.edu.au/197359>

Annual CO₂ emissions

Carbon dioxide (CO₂) emissions from fossil fuels and industry¹. Land-use change is not included.



Data source: Global Carbon Budget (2024)

OurWorldinData.org/co2-and-greenhouse-gas-emissions | CC BY

1. Fossil CO₂ emissions This refers to the carbon dioxide released when burning fossil fuels or from certain industrial activities. Burning fossil fuels — coal, oil, and gas — produces CO₂ during transport (cars, trucks, planes), electricity generation, heating, and energy use in industry. This also includes flaring, which is the burning of extra gas during oil and gas extraction. Some industrial processes also release CO₂. This happens especially in cement and steel production, where chemical reactions (unrelated to burning fuel) produce carbon dioxide. These figures don't include CO₂ emissions from changes in land use, like deforestation or reforestation.

Neoliberalism has conned us into fighting climate change as individuals

Martin Lukacs

Tue 18 Jul 2017 00.56 AEST

Stop obsessing with how personally green you live - and start collectively taking on corporate power





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Economy

Opinion

OPINION

Opinions | Environment

Why a hipster, vegan, green tech economy is not sustainable

Improving eco-efficiency within a capitalist growth-oriented system will not save the environment.



Vijay Kolinjivadi

Vijay Kolinjivadi is a post-doctoral fellow at the Institute of Development Policy at the University of Antwerp.



6 Jun 2019

HCI and Environmental Sustainability: The Politics of Design and the Design of Politics

Paul Dourish

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ABSTRACT

Many HCI researchers have recently begun to examine the opportunities to use ICTs to promote environmental sustainability and ecological consciousness on the part of technology users. This paper examines the way that traditional HCI discourse obscures political and cultural contexts of environmental practice that must be part of an effective solution. Research on ecological politics and the political economy of environmentalism highlight some missing elements in contemporary HCI analysis, and suggest some new directions for the relationship between sustainability and HCI. In particular, I propose that questions of scale – the scales of action and the scales of effects – might provide a useful new entry point for design practice.

Author Keywords

Environmental sustainability, environmental justice, political ecology, environmentality, scale, social networks.

similar technological interventions.

A wide range of studies have been published that connect questions of environmental sustainability and ecological responsibility to topics in HCI, including: studies of the owners of “green homes,” conducted with an eye to understanding the problems and opportunities surrounding forms of technological living [58]; studies of the use of mobile phones as environmental sensors for distributed pollution monitoring [40]; explorations of tools that might help people understand the impacts of their purchase decisions [54], transit decisions [21, 33], or domestic energy use [43]; and investigations of the role that sustainability might play in design practice itself [7, 24]. DiSalvo et al. [17] present a comprehensive review of this research. They note a broad focus upon individual rather than collective action, on *information technology as a persuasive force in behavior change*, and the adoption of existing HCI methods, tools, and rationales as means to a solution. In particular, they note a dearth of papers that

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“This calls for a paradigm shift: from a focus on isolated interactions to an ecosystemic perspective—one that attends to the complex networks surrounding humans and more-than-human actors, and that engages with layered sociotechnical, cultural, political, economic, and ethical concerns.”

dis.acm.org/2026



“Prime Minister Lee Kuan Yew planting a mempat tree ... The ceremony also signified the beginning of an island-wide tree planting campaign.”

16/06/1963





“The city of Wakanda was inspired by the closely related movements of solarpunk and Afrofuturism.”





Jamie
Wang

Reimagining the
More-Than-Human City
Stories from Singapore



Wang, J. (2024). *Reimagining the more-than-human city: Stories from Singapore*. The MIT Press. <https://doi.org/10.7551/mitpress/15189.001.0001>



*“If the Garden City movement reflects a type of **authoritarian nature** that prioritizes neat and orderly forms to discipline the residents and establish a stable environment for socioeconomic development, the **City in a Garden** underpinned by new technologies (like vertical greenery) enables dominance over urban nature through an assemblage of homogenization, targeted diversity, and meticulous work of inclusion and exclusion as it seeks to enact an eco-modernized sustainable green future.”*

p. 45, emphasis added

Jamie
Wang

Reimagining the
More-Than-Human City
Stories from Singapore

Wang, J. (2024). *Reimagining the more-than-human city: Stories from Singapore*. The MIT Press. <https://doi.org/10.7551/mitpress/15189.001.0001>



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International Journal of Human - Computer Studies

journal homepage: www.elsevier.com/locate/ijhcs



The more-than-human turn in human-plant interaction design: From utilitarian object to living co-inhabitant

Susan Loh^{a,*}, Marcus Foth^b, Yasu Santo^a

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^b QUT Design Lab, School of Design, Queensland University of Technology, 2 George Street, Brisbane QLD 4000, Australia

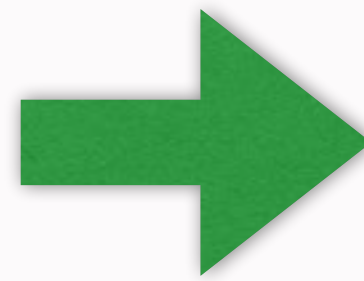
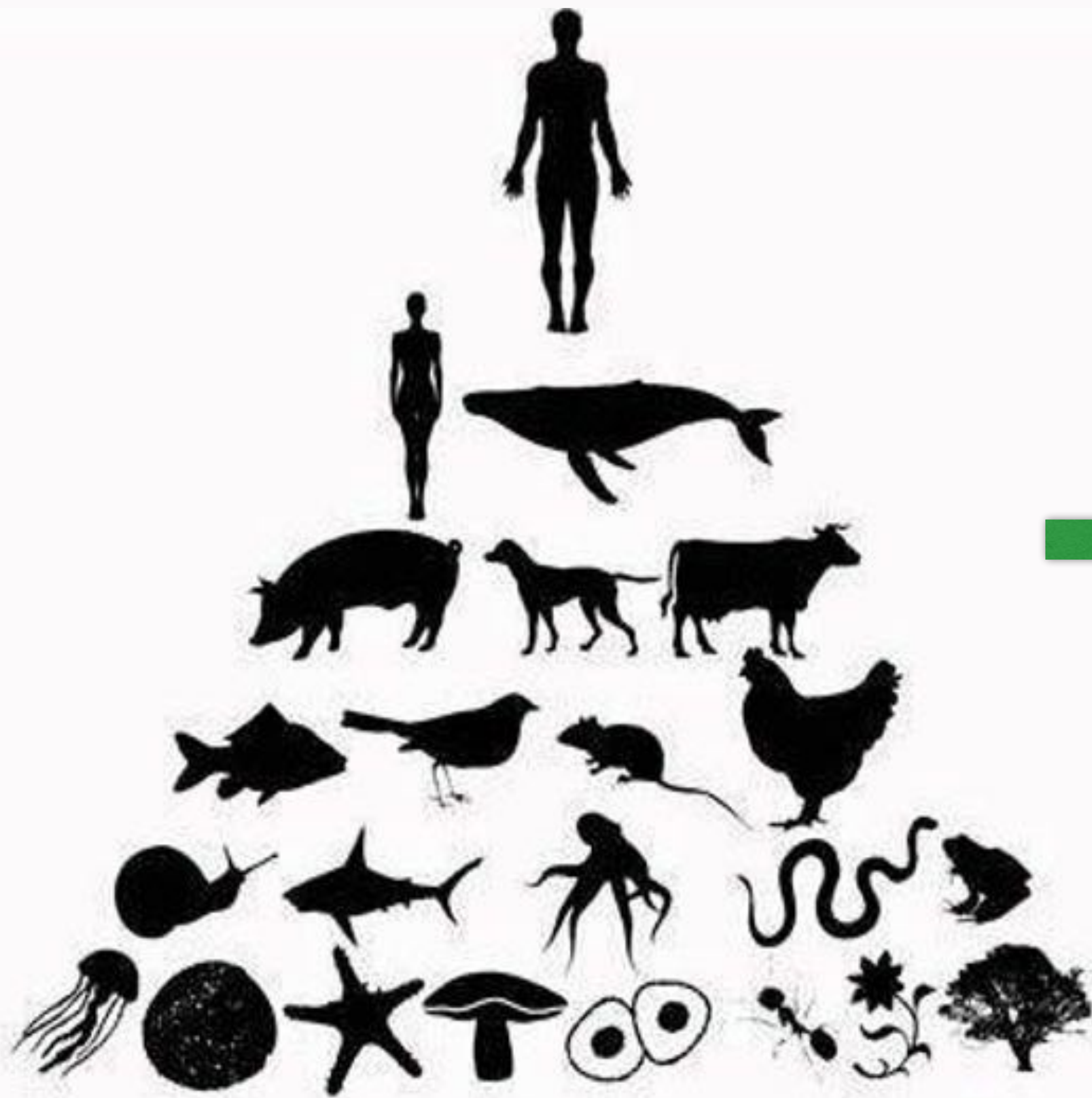
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Keywords:

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Human-plant interaction
Interaction design
Plants
Nature
More-than-human
Posthumanism

ABSTRACT

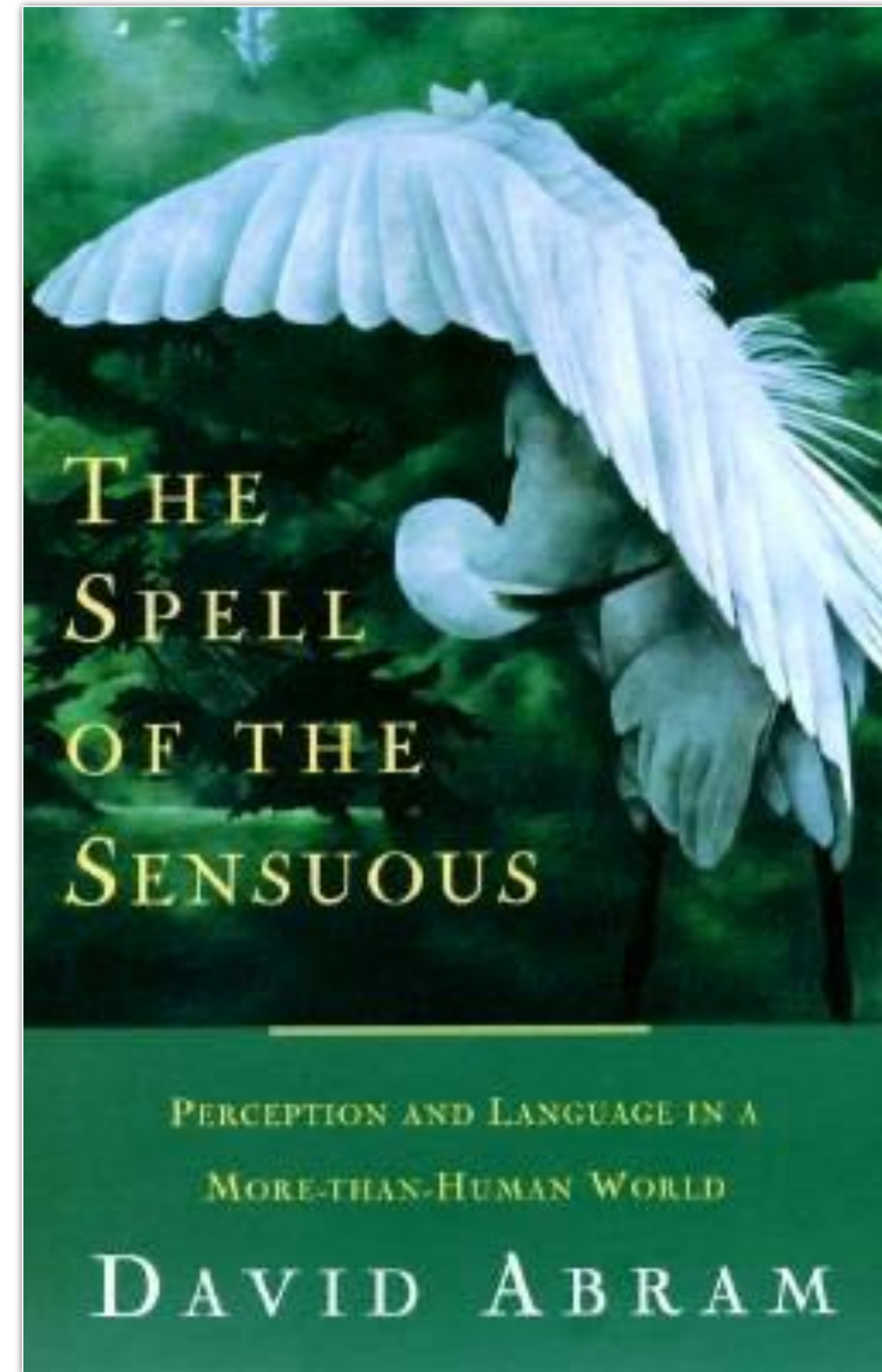
Plants and specifically indoor pot plants have featured as a prominent object in human-computer interaction (HCI) studies for more than two decades. Motivated by recent discourse in posthumanist and entanglement HCI, this paper seeks to contribute to the more-than-human turn in interaction design. It uses a twofold approach. We first engage in theoretically grounded *inductive* reasoning to postulate that the role and agency of plants in interaction design projects ought to change. This is backed up with a *deductive* approach based on a critical meta-analysis using a methodical review of human-plant interaction studies. The analysis identified a range of characteristics that we discuss in relation to study motives and outcomes. Our findings suggest that so far, plants-as-objects in interaction design are used as (i) a proxy for nature; (ii) a trigger for human experiences or; (iii) an interface for other actions. Our synthesis combining theory and meta-analysis contributes to ongoing design discourse on the ethical and societal implications of using plants in technologically mediated environments. We offer reflective remarks on how HCI can re-conceptualise plants from utilitarian objects towards recognising their value as living co-inhabitants.



IV.

**Relational Urbanism and
More-than-Human Futures**

More-than-Human World



More-than-human worlds Abram, 1996

Sustainment Fry, 2003; 2011

Cosmopolitan localism Manzini, 2009

Designing technologies of scale-making Dourish, 2010

Non/postanthropocentric design DiSalvo et al. 2011

Beyond capital Hakken, Teli, & Andrews, 2015

Transition design Irwin, Kossoff, & Tonkinwise, 2015

Citizenability Foth et al., 2015

Chthulucene Haraway, 2016

Voluntary simplicity & prosperous descent
Alexander, 2016

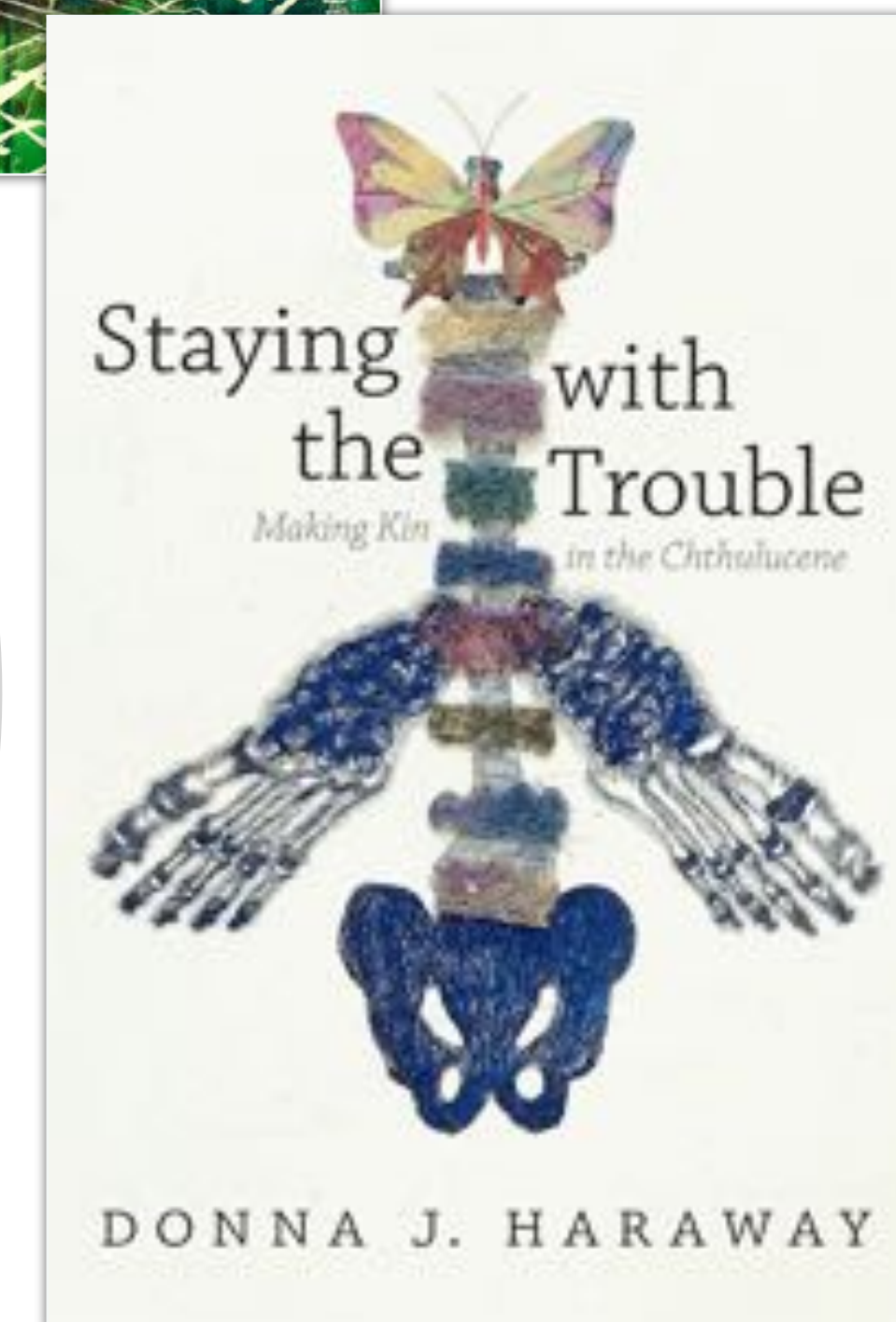
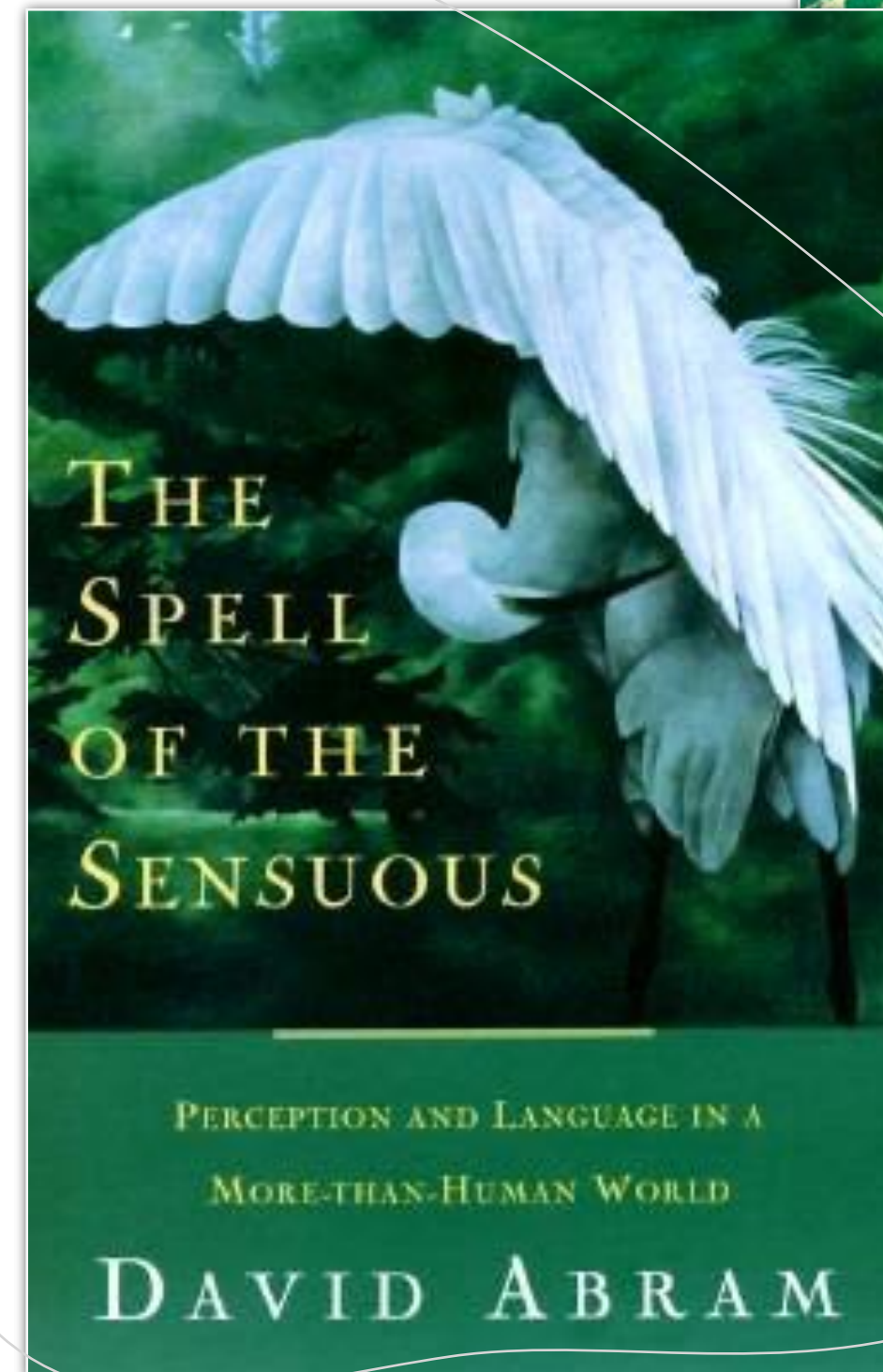
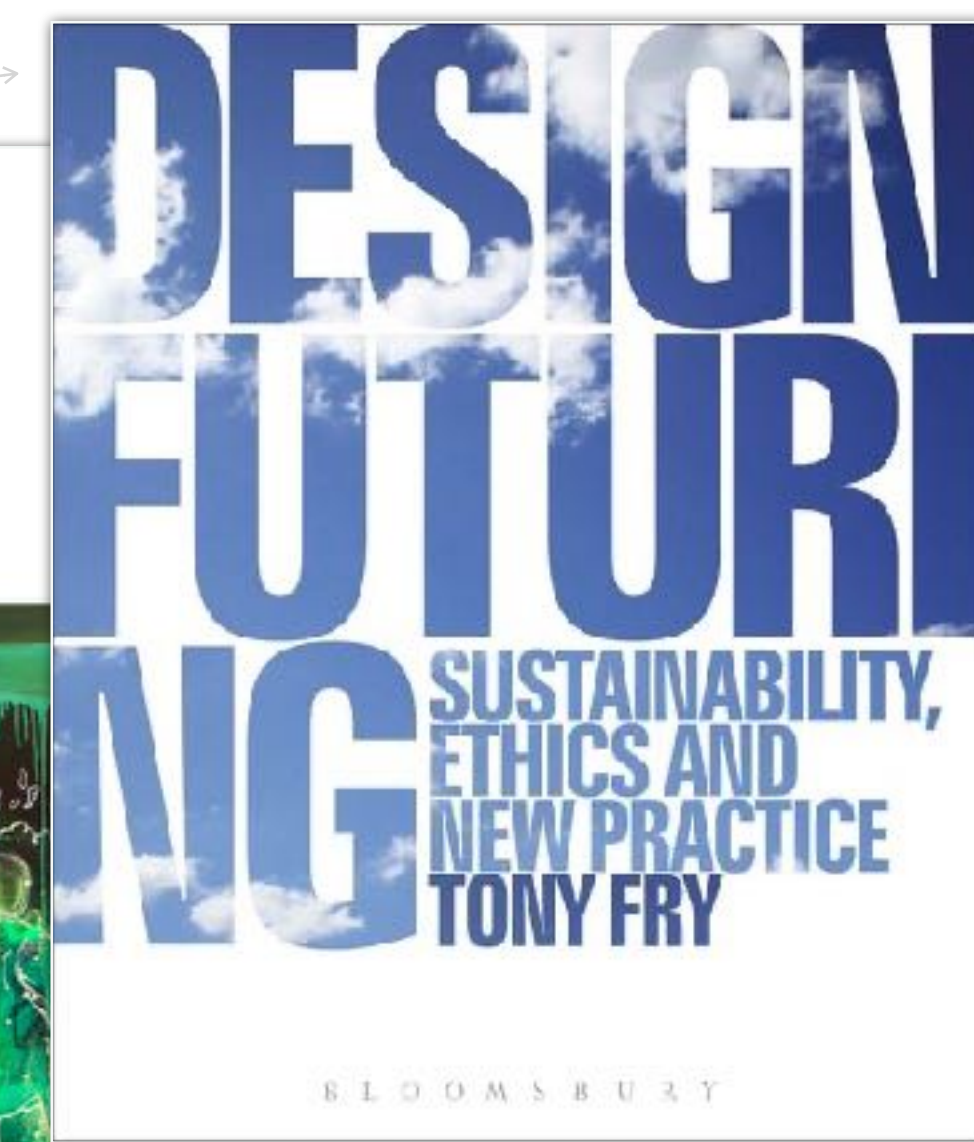
Mutualism Jeremijenko, 2016

Decentering the human
Forlano, 2016; 2017

Cohabitation Smith, Bardzell, & Bardzell, 2017

Existential crisis Light et al., 2017

GriffithReview52
Imagining the Future
Notes from the frontier
Samuel Alexander, Bronwyn Adcock



Decentering the Human in the Design of Collaborative Cities

Laura Forlano

Cities around the world are currently rushing to build sensor networks capable of tracking pollution and crime; connect their traffic lights, street lamps, garbage cans, and parking meters to the Internet; and reform industrial innovation regions into postindustrial hubs for digital design and fabrication. The networked character of the socio-technical landscape has forced collisions between the city, its infrastructure, and its citizens. Of course, these efforts are rife with technological determinism and Silicon Valley buzzwords such as “smart cities,” the “Internet of things,” and 3D printing, but they also signify new terrain for the practice of civically engaged, tech-savvy designers. For example, the street furniture, fixtures, casings, and interfaces for these networked and interactive infrastructures must be aesthetically (and politically) designed to suit the city and the surrounding urban environment. More important, designers can play a role in mediating between the top-down plans of government officials and their corporate suitors and the bottom-up actions of citizens and civic technologists. In this sense, we might consider design as a *hybrid* and *liminal* practice—one that occupies “a position at, or on both sides of, a boundary or threshold.”¹ Increasingly, designers must operate simultaneously at multiple scales (such as the urban, architecture and the built environment, objects, things and bodies) and often contradictory perspectives (including human as well as nonhuman stakeholders)—to remake the collaborative, peer-produced, open-source city.² This article extends previous arguments about decentering the human and nonanthropocentric design to think through ways designers can evolve existing human-centered design (HCD) methodologies to contend with socio-technical complexity—such as economic and ecological crisis—and create more responsible, accountable, and ethical ways of engaging with emerging technologies.³

Designers are increasingly engaged in projects that go beyond crafting individual graphics or products and toward the design of services, organizations, systems, platforms, and experiences. As designers take on these roles, they are engaged in the active creation and curation of complex socio-technical networks, constituencies, and alliances that come together around



Forlano, L. (2016). Decentering the Human in the Design of Collaborative Cities. *Design Issues*, 32(3), 42–54. https://doi.org/10.1162/DESI_a_00398

1 See Oxford Dictionaries online, <http://www.oxforddictionaries.com/definition/english/liminal> (accessed June 22, 2015).
2 Laura Forlano, “Work and the Open Source City,” *Urban Omnibus* (June 3, 2009), <http://urbanomnibus.net/2009/06/work-and-the-open-source-city/>; Laura Forlano, “Building the Open Source City: New Work Environments for Collaboration and Innovation,” in *From Social Butterfly to Engaged Citizen*, Marcus Foth et al., eds. (Cambridge, MA: MIT Press, 2011).
3 Carl DiSalvo and Jonathan Lukens, “Seeing the City through Machines: Non-Anthropocentric Design and Youth Robotics,” in *Digital Cities 6: Concepts, Methods and Systems of Urban Informatics*, Marcus Foth, Laura Forlano, and Hiromitsu Hattori, eds. (State College: Penn State University Press, 2009); Carl DiSalvo and Jonathan Lukens, “Nonanthropocentrism and the Nonhuman in Design: Possibilities for Designing New Forms of Engagement with and through Technology,” in *From Social Butterfly to Engaged Citizen: Urban Informatics, Social Media, Ubiquitous Computing, and Mobile Technology to Support Citizen Engagement*, Marcus Foth et al., eds. (Cambridge, MA: MIT Press, 2011).

FORUM | SUSTAINABILITY IN (INTER)ACTION

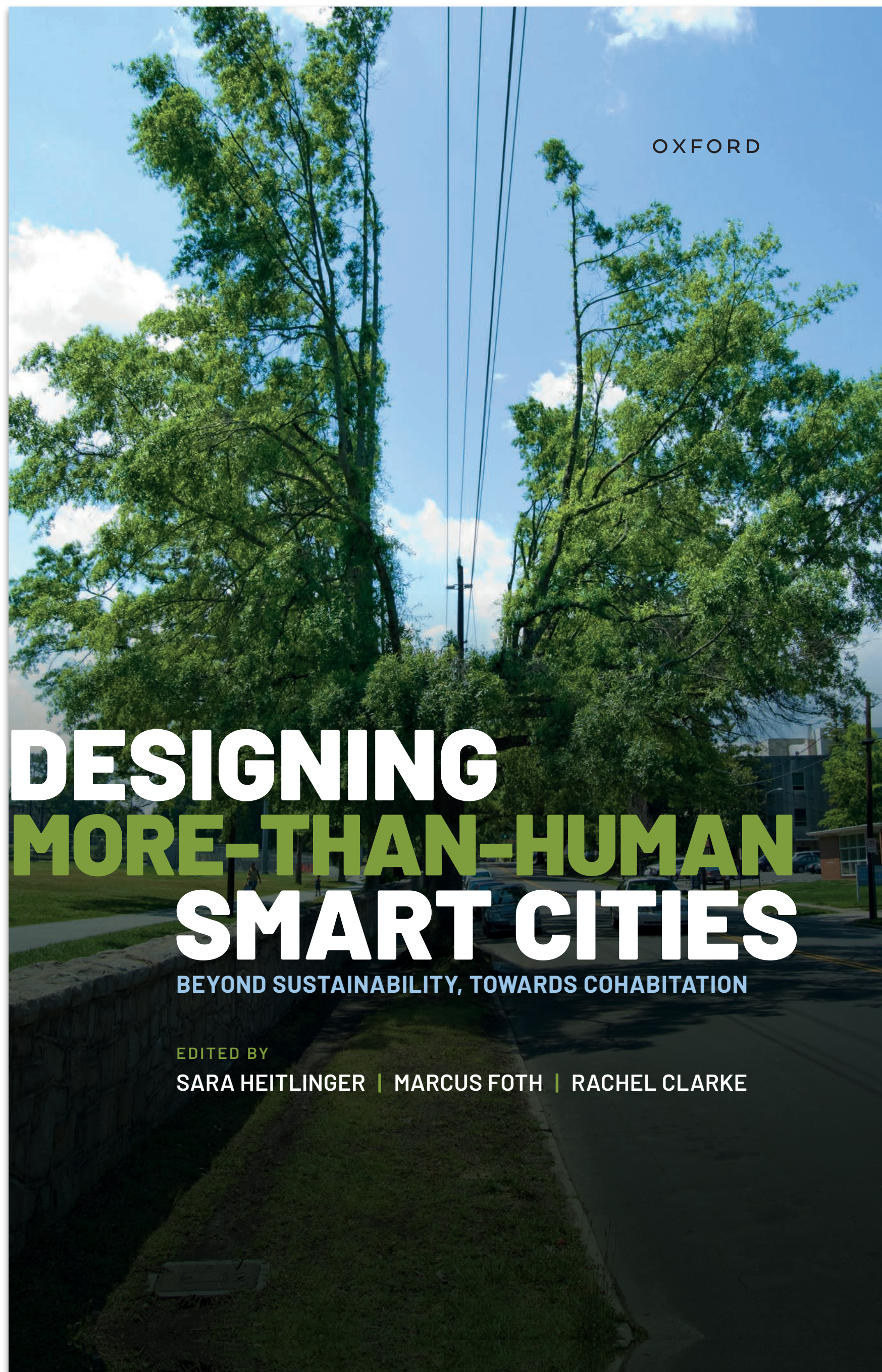
In this forum we highlight innovative thought, design, and research in the area of interaction design and sustainability, illustrating the diversity of approaches across HCI communities. — Roy Bendor, Editor

More-Than-Human Participation: Design for Sustainable Smart City Futures

Rachel Clarke, Northumbria University, Sara Heitlinger, City, University of London, Ann Light, University of Sussex, Laura Forlano, Illinois Institute of Technology, Marcus Foth, Queensland University of Technology, Carl DiSalvo, Georgia Institute of Technology



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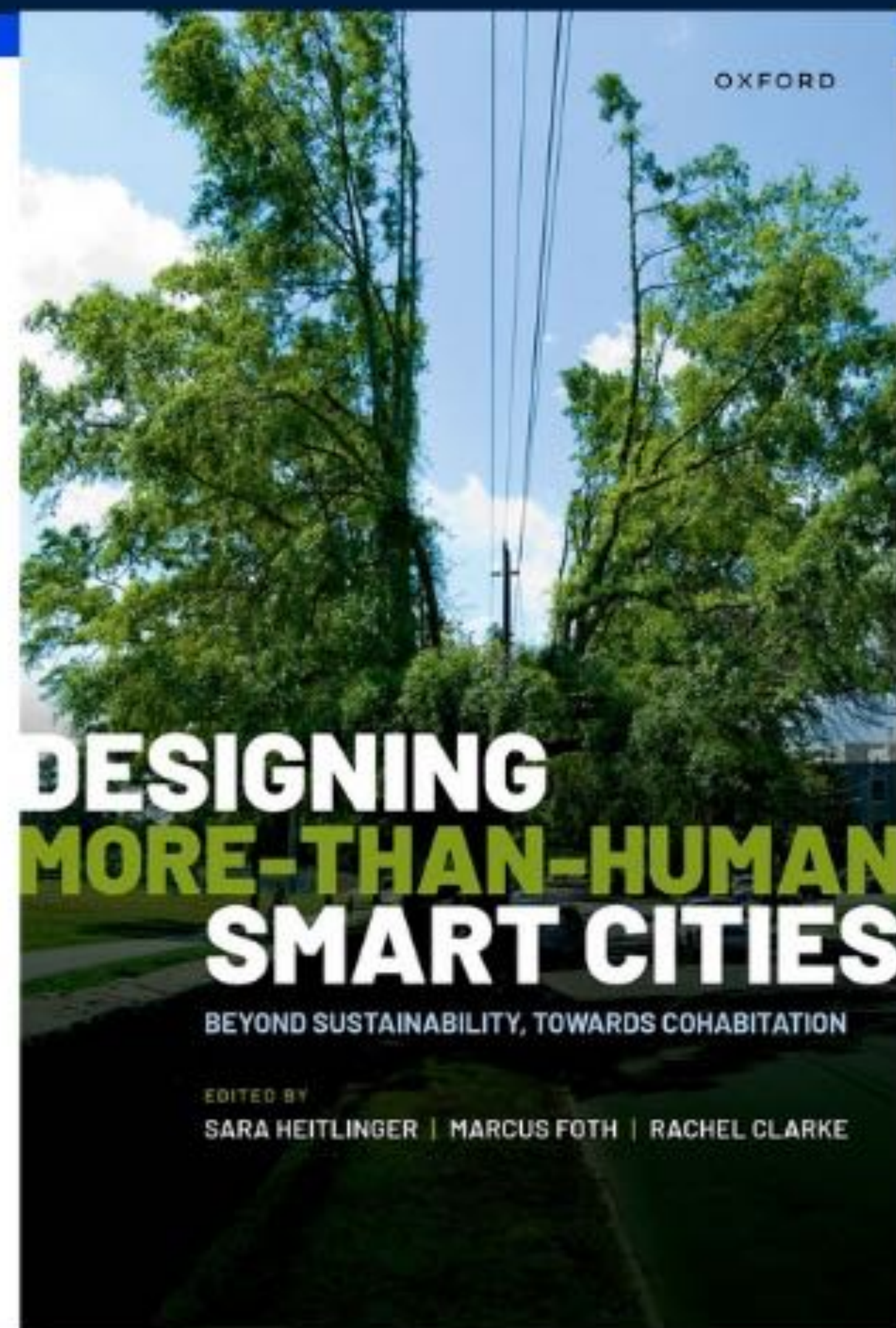
Designing More-than-Human Smart Cities

Beyond Sustainability, Towards Cohabitation

Edited by **Sara Heitlinger, Marcus Foth, and Rachel Clarke**

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Cathedral Thinking

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The Sagrada Família, has been under construction for 140 years, with the work beginning back in 1882. It's now in the final phase, and it is expected to be fully completed by 2030 or 2032.



A City of Good Ancestors

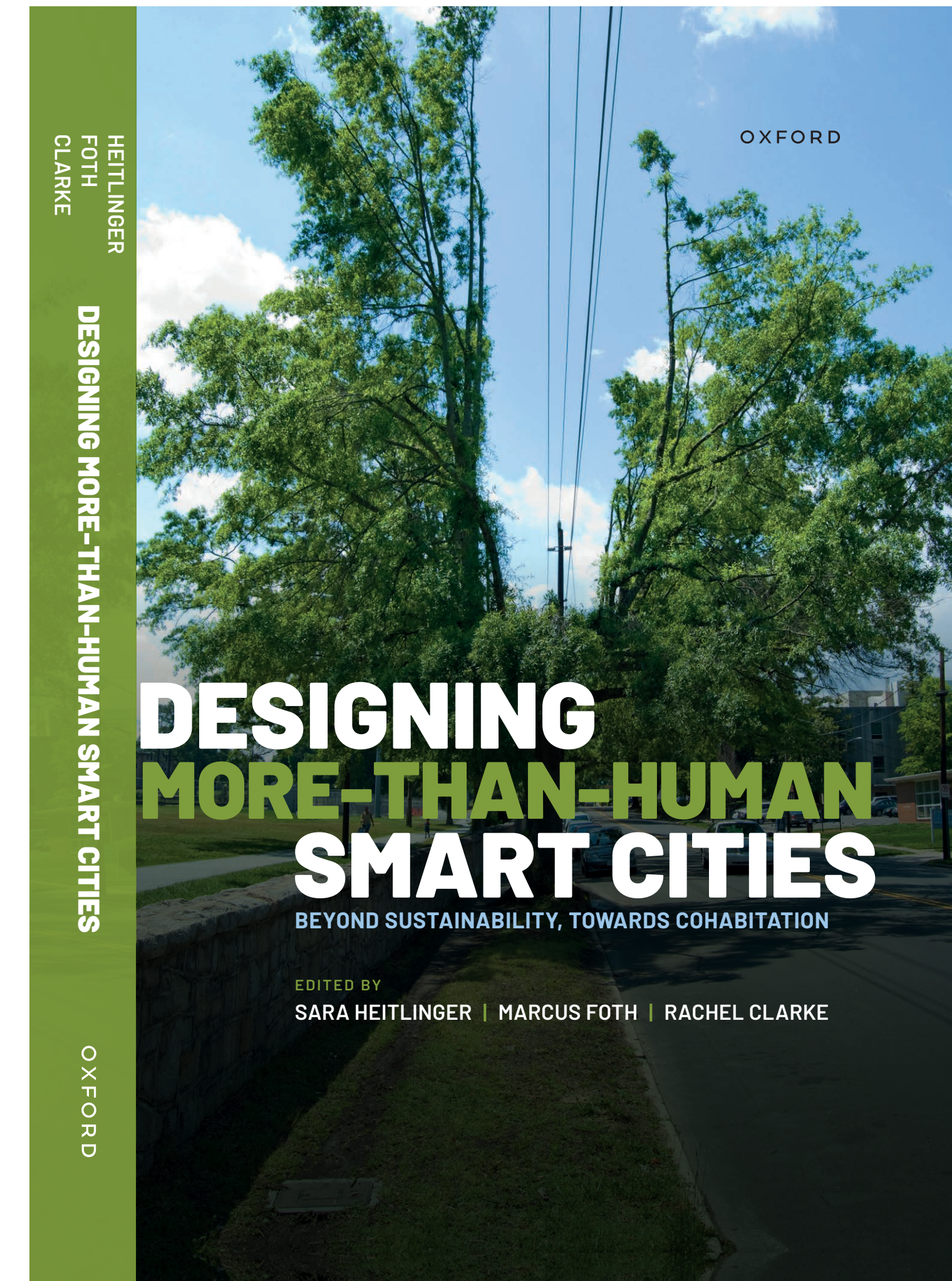
Urban Governance and Design from a Relationist Ethos

Mary Graham, Michelle Maloney, and Marcus Foth

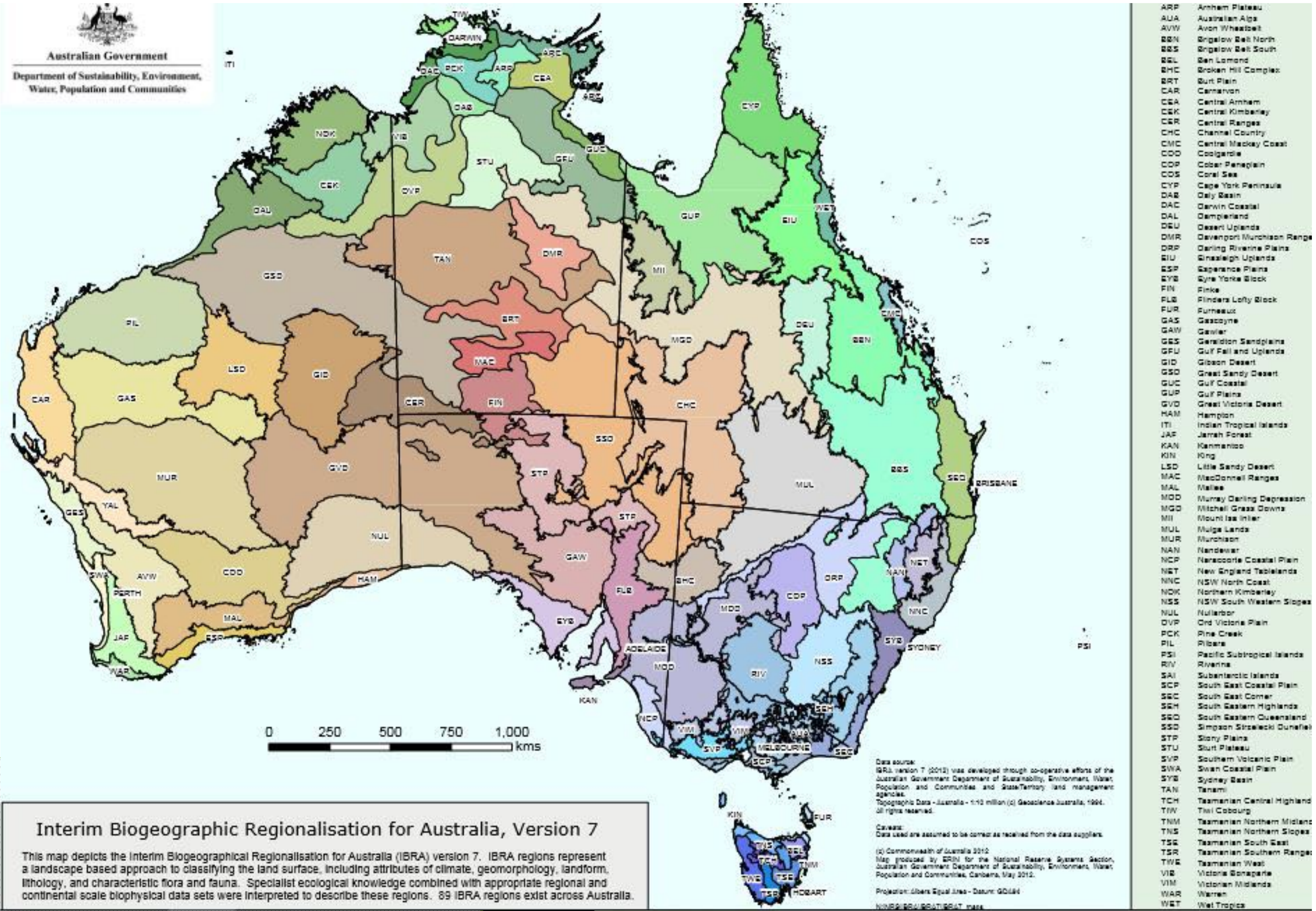
Introduction

When considering the future of cities, there are many urgent and immediate issues to consider: the impacts of climate change and sea level rise; effective and socially just planning; access to affordable housing; the role of technology, digital inclusion and citizen surveillance; the sustainability of food and other materials coming into the city; the management of waste and pollution coming out of the city; and so much more.

But what if we also take a long view? As an organising structure for human societies, cities have experienced their first 10,000 years of development. What if we contemplate the future of cities and other human settlements for the coming 10,000 years? Given the current threats of climate change, as well as the ecological and social justice challenges humans face, this is an exercise in deep optimism and what Krznaric (2020) calls ‘cathedral thinking—the art of planning into the distant future’. If human beings and their societies are to survive for another 10,000 years, what governance principles should guide us, and how can we ensure cities turn from an agglomeration of human settlements and infrastructure into habitats that are regenerative, socially just and capable of supporting a thriving more-than-human ecosystem (Panelli 2010; Metzger 2019)? How do we design not just smart cities but ‘seven generation cities’ (Engle et al. 2022) or—borrowing from both Krznaric (2020) and the late Aboriginal elder Maureen Watson¹—*a city of good ancestors* that will serve the generations of humans and more-than-humans who follow us well into the future?

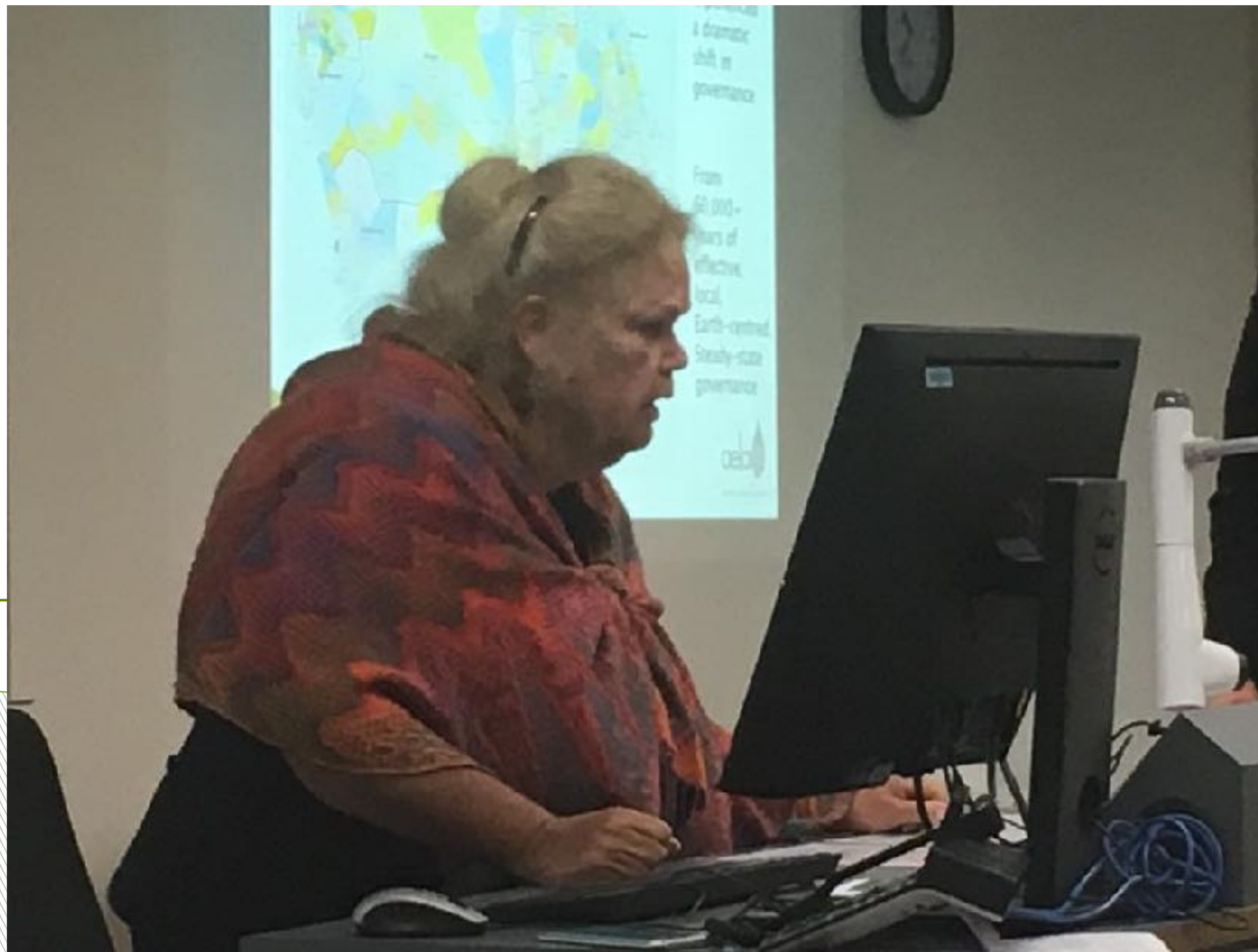


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This map depicts the Interim Biogeographical Regionalisation for Australia (IBRA) version 7. IBRA regions represent a landscape based approach to classifying the land surface, including attributes of climate, geomorphology, landform, lithology, and characteristic flora and fauna. Specialist ecological knowledge combined with appropriate regional and continental scale biophysical data sets were interpreted to describe these regions. 89 IBRA regions exist across Australia.

Aboriginal law and ethics



Adjunct Associate
Professor, UQ
And Kombumerri
Person (Gold Coast)

Dr Mary Graham

Relationist Ethos

- ▶ In Aboriginal law, the two most important kinds of relationship in life are, firstly, those **between land and people** and, secondly, **those amongst people themselves**, the second always being contingent upon the first.
- ▶ First laws – the land is the law
- ▶ Second laws – kinship, custodianship, locality, balance, separating power and authority, everyone belongs, the landscape is alive

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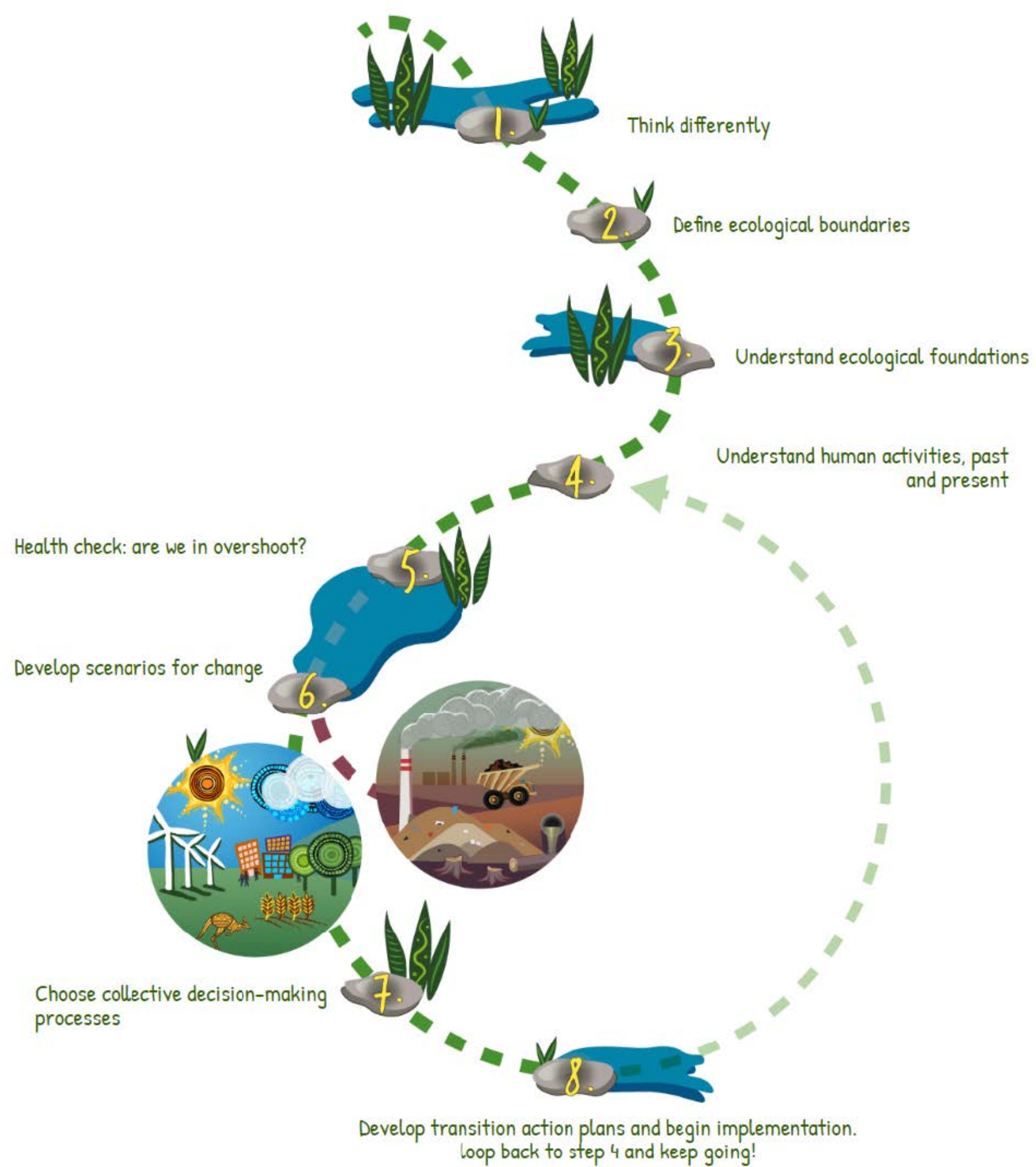
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A City of Good Ancestors

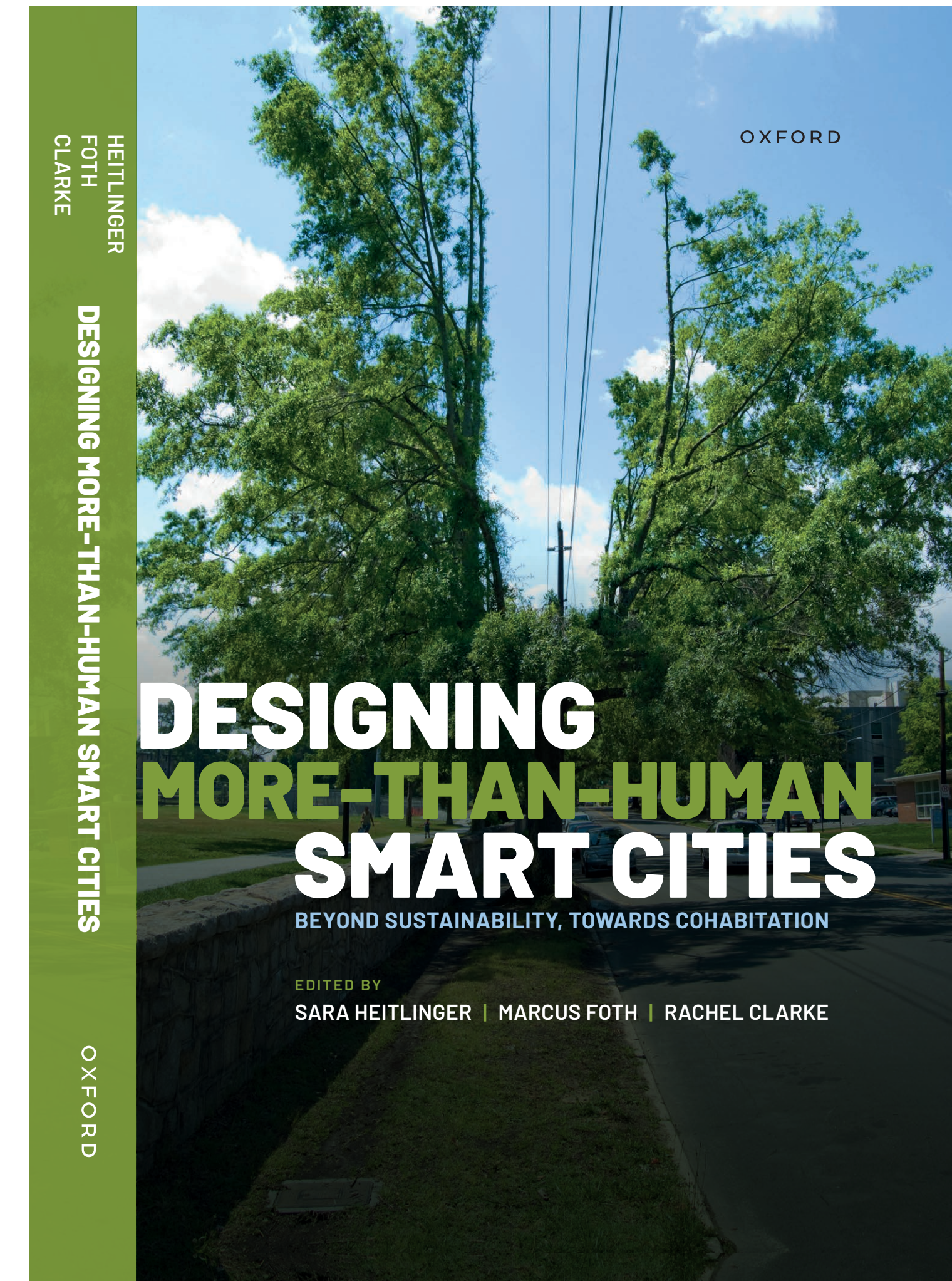
Urban Governance and Design from a Relationist Ethos

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Introduction

When considering the future of cities, there are many urgent and immediate issues to consider: the impacts of climate change and sea level rise; effective and socially just planning; access to affordable housing; the role of technology, digital inclusion and citizen surveillance; the sustainability of food and other materials coming into the city; the management of waste and pollution coming out of the city; and so much more.

But what if we also take a long view? As an organising structure for human societies, cities have experienced their first 10,000 years of development. What if we contemplate the future of cities and other human settlements for the coming 10,000 years? Given the current threats of climate change, as well as the ecological and social justice challenges humans face, this is an exercise in deep optimism and what Krznaric (2020) calls ‘cathedral thinking—the art of planning into the distant future’. If human beings and their societies are to survive for another 10,000 years, what governance principles should guide us, and how can we ensure cities turn from an agglomeration of human settlements and infrastructure into habitats that are regenerative, socially just and capable of supporting a thriving more-than-human ecosystem (Panelli 2010; Metzger 2019)? How do we design not just smart cities but ‘seven generation cities’ (Engle et al. 2022) or—borrowing from both Krznaric (2020) and the late Aboriginal elder Maureen Watson¹—*a city of good ancestors* that will serve the generations of humans and more-than-humans who follow us well into the future?





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