Designing through Planetary Breakdown

Locating Material Knowledge and Practical Skill

Edited by Jesse Adams Stein and Chantel Carr

First published 2025

ISBN: 978-1-032-78155-6 (hbk)
ISBN: 978-1-032-77956-0 (pbk)
ISBN: 978-1-003-48556-8 (ebk)

Climate transition possibilities at design's edges

Labour, skill, care and repair

Jesse Adams Stein and Chantel Carr

DOI: 10.4324/9781003485568-1

The funder of the Open Access version of this chapter is the Australian Government through the Australian Research Council's Discovery Early Career Researcher Award (DE210100158).

Routledge
Taylor & Francis Group
LONDON AND NEW YORK

CLIMATE TRANSITION POSSIBILITIES AT DESIGN'S EDGES

Labour, skill, care and repair

Jesse Adams Stein and Chantel Carr

Introduction

In early 2022, the Northern Rivers region in the Australian state of New South Wales experienced two catastrophic flood events in close succession. Regenerative farmers Anastasia and Julia Vanderbyl, who experienced the disasters, revealed one thing they learned from the experience:

> The torrenting water cut every road and entrance, leaving us completely cut off from the world for weeks. But what we found in this was the power of the community that surrounded us … The community built pulley systems over broken bridges to receive food and medicine … TV and literature had always told us that under crisis, society would collapse – that humans are selfish and greedy. But in disaster, we found the opposite.[1]

Planetary breakdown is not a future threat, but a present reality for vulnerable communities, who increasingly find themselves working through – indeed *designing through* – disaster after disaster: human, environmental, infrastructural, political and structural.

In March 2023, the Intergovernmental Panel on Climate Change (IPCC) issued the *AR6*, a report that soon came to be known as the IPCC's "final warning", urging immediate global action to lower greenhouse gas (GHG) emissions, so as to avoid the catastrophic impacts of global surface temperature warming of over 1.5°C.[2] According to the report, the years between 2023 and 2030 will be crucial, requiring the swift transition of as many industries and activities as possible, towards low-carbon emitting or wholly decarbonised systems.[3] Evidently, these transitions will require wholesale changes in

DOI: 10.4324/9781003485568-1

industrial production and energy, agriculture and food, construction, infrastructure and transport, healthcare and waste disposal. It is widely acknowledged that such shifts will be uneven and difficult to achieve. Furthermore, these changes will involve profound transformations to paid and unpaid work, as we have addressed in this book's sister collection, *Working through Planetary Breakdown*.[4]

Climate disruption raises questions about how much of the necessary rapid, large-scale change proceeds by *design*. As editors of this collection, we aim to be intentionally inclusive and broad in how we conceptualise design in the context of climate futures. Looking both within and beyond professional design, the scale of the task ahead requires the expertise of everyone: citizens, governments, companies, organisations and communities – and at a variety of scales.[5] Design practice – when conceived as a capacity to imagine and shape change – offers a vital space for exercising agency to bring forth more just, equitable and liveable futures. This is why design is at the centre of our concerns in this collected volume: as an often-invisible yet infinitely valuable response to the twin challenges of climate mitigation and adaptation. Given the potential for contestation and mixed understandings of what is meant by "design" as a term, we will address what we specifically mean by design in the following section.

The most effective responses to this crisis can no longer be the most "perfect" ones. We can no longer afford to dwell on minute distinctions, nor to engage in granular arguments about getting the definition of "just transitions" or a "Green New Deal" exactly right before launching in. The next half-decade or so requires a shift *right now* to more pragmatic, swift and purposeful activities. "All hands on deck" will be required to care for and repair the planet and its inhabitants.

Within this response, there is an ongoing responsibility to listen to First Nations voices, and take concrete action, not lip service, in the decolonisation process. First Nations people hold deep knowledge about how to effectively care for Country.[6] Strategies such as Indigenous-led land management and cultural burning, for example, are vital in terms of mitigating the impacts of climate change.[7] Australian First Nations design and architecture scholars have developed frameworks for how to design *with* Country, such as D'harawal Knowledge Keeper Shannon Foster and Wugulora woman Jo Paterson Kinniburgh (Aotearoa New Zealand), who share a frank conversation about design, labour and care in Chapter 6 of this book.[8]

Having invoked the term "all hands on deck" in this chapter – and in the symposium that inspired this edited collection – we make an important qualification. By no means do we suggest that the vast human populace – recalled by the phrase "all hands" – holds equal *responsibility* to lower and cease GHG emissions. This is not a case of asking people to go without, or to shrink their own personal "carbon footprint". Indeed, the notion of the carbon footprint – a concept used to measure and compare the amount of GHG

emissions produced due to particular activities – is often mobilised in ways that focus on individual "lifestyle" choices. As a number of scholars and critics have argued, the concept of the carbon footprint individualises broader systemic and structural problems that require collective action.[9] For too long, fossil-fuel corporations have successfully leveraged the carbon footprint in ways that detract attention from their own enormous culpability. In the task of decarbonisation, we maintain that the ultimate responsibility remains with the biggest emitters: multinational fossil fuel corporations and the politicians, business leaders and oligarchs who enable them. Whether or not those who hold the greatest power to reduce GHG emissions will take this responsibility seriously remains to be seen. This is, unfortunately, the "elephant in the room" for almost all discussions about climate change mitigation, transition and survival, this book included.

No matter how those higher-level decisions may play out, there remains a great deal of *work* to be done, and much of it is intensely practical. "All hands on deck" will be involved in the task of mitigating, surviving and recovering from whatever the changed climate throws at us. The tasks ahead are indeed enormous, but they are also ongoing, ever-changing, shared collectively and experienced locally. It is important to address these challenges with an eye to the differing scales of intervention. The local and the regional are not neatly nested within global systems, and remain significant as discrete points of action and agency, which can occur while still holding power to account. Undoubtedly, the future will involve an abundance of physical and situated actions and differing scales, including the processes of planning, reworking, organising, transforming, transitioning, switching, making, creating, testing, over-hauling, repurposing, repairing and maintaining.

As it happens, all of the activities listed above are also design practices, as well as being profoundly social, technical, and in many cases, convivial and communal. In a best-case scenario, such practices could lead us to collectively design a liveable future. In what we concede is a more realistic but far more frightening scenario – where the planet warms at least 1.5°C above pre-industrial levels – the work of "all hands" may involve a somewhat different set of verbs: adapting, mitigating, responding, supporting, recovering, caring, salvaging, making-do, acclimatising and surviving. Perhaps we may end up somewhere in the middle of these two extremes. But our point remains, and this is where the contribution of this collection lies: to consider how the processes and perspectives of design enable new, practical pathways towards transition, as well as moving us well beyond unproductive old "jobs vs. the environment" debates.[10]

Defining design (with porous boundaries)

In a context as urgent and critical as these next few years, it might therefore appear incongruous, to some readers, for us to be writing about *design* at all. This rests on what we mean when we use the term "design". To some readers,

the term design may conjure the worst excesses of capitalism, as in "designer products" or "designer lifestyles". This suspicion is well-founded. Design undoubtedly has a long-term relationship to capital, and throughout the twentieth century and into the twenty-first century, there are myriad ways in which design has functioned to encourage and intensify over-consumption and emissions-generating production. All too soon, objects, ideas and systems are relegated to the category of "trash".[11] As design theorist Joanna Boehnert has eloquently noted, "the interests of powerful groups are manifested in design".[12] Indeed, it is not difficult to discern how professional design – at the level of systems, products, aesthetics and communication (etc.) – so often operates to conceal and obscure the environmental damage, exploitation and power relations inherent in so many forms of production and corporate behaviour in neoliberalised economies.[13]

Definitions are notoriously tricky territory, and for design this is particularly the case. Design theorist Guy Julier simply notes that design is "far too diverse in how it is understood and used for us to be able to express a single definition for it".[14] Other design theorists have made similar claims about design's heterogeneity and unhelpfully loose boundaries.[15] Even when only evaluated as a set of professional practices, the design discipline has itself has broadened considerably in the past four decades (not coincidentally in alignment with the rise of neoliberalism), to encompass various non-object-oriented specialisations.[16] These include but are not limited to interaction design, user-experience design (UX), service design, strategic design, social design, among others.

What we mean by "design" here is broader and more malleable than the reductive, professionalised construct that is often imagined when the term "design" is used in mainstream contexts. To be clear, the authors in this collection do not limit their understanding of design to a professionalised industry or discipline, but to a deliberate and considered orientation towards material culture, space, environments, systems and places. In this collection, the emphasis falls on *processes* of designing (in addition to, and incorporating, the verbs of making, caring, repairing, sharing, maintaining and collaborating). This "design-attuned" perspective allows us to consider, for example, the cultural life of technologies, the politics of craft, object lifetimes, supply chains, circularity, product stewardship, waste, corporate responsibility and community-led participatory design systems, to name but a few "design-attuned" directions of inquiry.

Design and labour: A crucial consideration

A processual understanding of design, therefore, leads to a closer engagement with the question of *labour* in relation to design. This draws particular attention to all those who are involved in broader sets of practices and perspectives that

relate to material culture, and in relation to the planned and organised (human-made) world. We particularly emphasise processes and knowledge systems that emerge from everyday human experience, and which involve applied responses to very real problems. This includes, for example, design labour that incorporates both professional and non-professional making and repair practices.[17]

In articulating the design/labour relationship, we find echoes in the work of sociologist and political theorist Damian White, who suggests that an analysis of design through the lens of labour might:

> … capture the activities of [professional designers] but also the sweat, toil and craft of a much broader set of designers, makers and creators – from coders to contractors, model makers to building managers – whose *invisible labour* across diverse geographies sustains all kinds of design projects.[18]

Likewise, in our own empirical research, we (Stein and Carr) have found the embodied, material world to be tightly interconnected with labour, and indeed, most often the labour of so-called "ordinary" people. White has argued that one way forward is to think about all the different "kinds of work, labour and design that will be involved in making, building and producing different kinds of democratic social natures to facilitate just transitions".[19] This edited collection, alongside its sibling, *Working Through Planetary Breakdown*, begins the process of empirically unpacking work, labour and design, across a wide range of industries and contexts.

Understanding design as a process connected to labour reveals how power relations are expressed in both material culture, and everyday experiences of design and production. A design/labour lens opens the way for appreciating the labour of routinely ignored workers. For example, production workers (largely but not exclusively in the Global South), as well as care workers, technicians, repairers, cleaners, waste sorters, maintenance workers, disaster respondents, and so on. This importantly encompasses unpaid labour – for instance domestic labour, care labour, volunteer labour and community group participation.[20] Viewing design/labour from this position also allows us to appreciate the challenges that professional designers face – vis-à-vís their job security – in any attempt to assertively intervene and "green" the production systems they work within, as design scholar Elise Hodson gestures to Chapter 2 of this collection.[21] Evidently, design labour is not immune from exploitative employment relations, and, like many other industries, the field suffers from a lack of worker organisation.[22]

In other words, *all hands* undertake design, all hands make the world what it is, certainly not just professional designers.[23] Design theorist Ezio Manzini, probably the best-known proponent of this broad view of design participation, distinguishes between "expert design" and "diffuse design" – the latter being founded in the everyday and undertaken by what he calls "nonexperts".[24]

We lightly note, however, that enforcing a distinct binary between "designers" and "nonexperts" is problematic, and the latter term negates valuable expertise and knowledge in other fields.[25] However, we share Manzini's understanding of design as a generalised human activity (which necessarily includes broad publics in the process of designing our existence). This politicised and yet utterly everyday understanding of design ties it inherently to social life and acknowledges the need for constant change and redesign, in light of continually evolving economic, environmental and social conditions.

What design is not

This broad perspective on design also begs for some limits. Not everything is design. Our orientation towards design as a process, and design in relation to labour, acknowledges that social democracy and institutional change must also be designed, and carefully. In our framework design is not, for example, a Hayekean fiction of the economy as a spontaneous social order requiring no intervention.[26] The alleged "freedom" of unregulated markets stands in stark contrast to the kind of care and attention advocated by authors in this collection. Furthermore, this text distances itself from the popular idea of design as a form of individualised self-actualisation achieved through designers possessing elitist special "design knowledge", or the employment of "design thinking" business strategies that essentially reject expertise and purport to have no history. We concur with Tony Fry and Adam Nocek, among others, in critiquing the widespread belief that design can be defined as a type of innovative problem-solving that provides novel solutions to complex problems.[27] This perspective is not only simplistic, but it is also completely embedded within neoliberalised concepts of design-for-industry.

Leveraging design

Notwithstanding the ephemerality of its boundaries, and professional design's disastrous relationship to capital, design remains a highly influential set of ideas, processes and discourses, and it is necessary to contend with this influence. Design already has an instrumental place within some governmental activity, even within plans concerning energy transitions and industrial transformation.[28] For better or worse, design and the creative industries are already an active element in how policies are rolled out and communicated, and in how problems are addressed.[29] Strategic design and service design, for instance, are design sub-disciplines operating through consultancies hired by both public service agencies and the private sector. Admittedly, much of this applied design activity tends to work in the interests of the powerful, and to support neoliberalising processes oriented towards profit, concealment, individualisation, financialisaton, control and efficiency. One challenge is to take this *existing*

engagement with design (in its broadest sense), and to turn this towards the end goal of a swift and fair transition towards decarbonised systems.[30] This is no mean feat. As other scholars have noted, however, design has particular attributes and benefits that are suited to moments of transition.[31]

Boehnert argues that design's capacity to influence understandings and reshape practices is particularly valuable:

> Design is effective at change making because instead of telling people what to do and think, it creates new communication, metaphors, tools and techniques to enable people to see the value in new ways of doing things.[32]

This presents both strength and challenge – requiring careful consideration of how power is wielded. As much as design can mask dominant power relations, it can operate to make the invisible visible; rendering understandable the complex dynamics of transition.[33] Further, designers are adept at re-framing the questions being asked. In a socio-political environment that can easily become soured with bitterness, political in-fighting and paralysed fear, such re-thinking can be refreshing. This can help move beyond intractable political debate regarding just transitions and the sometimes false dichotomies inherent in decarbonisation discourse, particularly as they exist in the media.[34] Pushing further, Boehnert notes, design is wholly "necessary for the production of either ecologically harmful or beneficial ways of living".[35] In other words, design perpetuates, whether we like it or not. The task, then, is to turn design towards practical, generative and future-oriented social and ecological outcomes, rather than world-destroying ones.

Designing for societal and environmental transitions

A number of design theorists have attempted to define how an ecologically responsible, ethical transformation of design might happen. Proponents of Transition Design, such as Terry Irwin, Gideon Kossof and Cameron Tonkinwise emphasise the role of design in facilitating large-scale societal transitions, through multi-scalar, temporally attuned and systems-change oriented approaches.[36] Similarly, Boehnert calls for systems transitions and "ecologically literate design knowledge", to inform such design strategies, brought into being through "distributed and regenerative design economies".[37] Fry and followers have favoured the concept of "redirective practice", where, in order to beneficially deploy design as a political project and an instrument of change, "design itself needs to transform".[38] In a recent challenge to the functionalist discourses of "sustainable design" and the well-intentioned efforts of "design for the Anthropocene", Nocek and Fry claim that design is so tightly bound to the "historical production of Enlightened man", that humans themselves cannot be understood outside of the frame of destructive, world-destroying design.[39]

We wish to lend some nuance to this discussion by noting that there remains a considerable difference between design's present embeddedness in neoliberalised political economy – and design's *potential* function within possible economic models that are more social-democratic and welfare-oriented. We therefore still see a place for design (in its broadly defined sense) within imagined future economic models that are more regulated and participatory, featuring far more equitably redistributed wealth and resources. This evidently points towards ideas such as the Green New Deal and just transitions (rather than, perhaps, more idealised political conceptions, which offer less concrete pathways to actualisation).[40] In other words, there is a strong need to draw design away from neoliberal economic power, and to contribute to its resurgence in generative, constructive and ethical ways. This would allow space for understanding design beyond heterodox economic views, such as design within the household, the workshop, the classroom, the local community, the commons and in post-disaster scenarios.[41]

Design as a process: A tangible example

It may help, at this point, to return to the quote we began with at the start of this chapter. In 2022, at the time we were crystallising the concepts for the *All Hands on Deck* symposium, large parts of Northern NSW and Queensland in Australia were experiencing unprecedented flooding and landslides. In particular, the aforementioned Northern Rivers region of NSW faced multiple flood disasters in one year, with the Lismore flood record-breaking (Wilsons River reached 14.4 m), and more than 10,000 people rendered homeless.[42] In the immediate aftermath of the disasters, broken connections to road systems were common problems that the community attempted to solve collectively. On one occasion, after being cut off by landslides, community members in a region called Main Arm designed and erected a large pulley system to allow in food and other essential supplies.[43] Locals built makeshift bridges over flooded causeways, using their own tools and extant materials.[44] In the weeks, months and years that followed, local community action took many forms, including the development of participatory design and co-design systems for organising housing and saving local businesses, grassroots urban and architectural planning for future disasters, and regular community discussions about disaster-resistant design.[45] Notably, a great deal of this activity occurred in the absence of much-needed state support.

When these community volunteers threw themselves into these vast, often dangerous projects, they were not specifically undertaking "innovative design", "design for resilience", "disruption" or other similar neoliberalised notions. They were simply surviving, and drawing upon their practical skills and collective approaches in the process. There are many such examples – particularly in regions already experiencing climate-driven disasters across the globe – of

families and communities working *and designing* together, in the wake of devastating flood, landslide and fire events.

In no way do we wish to make light of the horrific circumstances surrounding these disaster events, and we share the Northern Rivers example because it evocatively points to a problem for those who write and speak about design. Recent design theory debates feature strongly worded language around capitalism, consumption and the human condition. But at the same time, such debates remain quite separate from the desperate practical realities of a planet – and a human populace – that is already enduring all kinds of dysfunction and breakdown in environmental, economic and social terms. We believe this disconnect – between the theorists who demand so much of design – and the lived realities of everyday life, is a cause for concern. (We implicate ourselves in this problem, too.) The reality is most people do not live in a theorised world. They are often too tired and too busy. Human experience is messy, inconsistent and always political. Increasingly, environments and climates could be described in similar ways: unpredictable, volatile and unbalanced. This is where the value of empirical research (so crucial to the *All Hands on Deck* project) comes in.

Valuing qualitive empirical research

While not without its flaws, we emphasise that qualitative empirical evidence, in particular, points towards practical and nuanced ways to engage with the realities of transition. This can result in insights that may be of genuine use to those with decision-making power. As we have often sought to demonstrate through our own work, qualitative empirical research remains grounded in experience, reminding those who might otherwise forget of the everyday realities of work, life, materials and production in a fragile world.[46] This type of research is time-intensive to do well, and an attentiveness to context means it does not scale easily in a way that fits with technocratic approaches to problem-solving. Yet there are other benefits to empirical research that are not easily replicated in other approaches: it is not only investigative, but can also push towards understanding how lived experiences shape future scenarios and possibilities through better understanding things like motivations, perceptions, and values. Speaking to those "on the ground" not only allows us to understand *what happened*, but also: what didn't happen, what did people want to happen, how could things be better, how could things be done another way?

Connecting design, social sciences and labour discourse

The project emerged from our (Stein and Carr's) shared research interests in questions of labour and the environment, alongside our involvement in both social sciences and design scholarship. There are few colleagues who are located in this precise disciplinary triangulation. We are therefore particularly engaged

with the work of the aforementioned Damian White, whose research focuses on the political economy of post-carbon transitions, environmental labour studies, and the political theory of design. White argues that there remains a "reconstructive" potential for an alternative ecological and labour politics, one that fully incorporates the most progressive and ambitious elements of radical design and transition design.[47] In particular, his approach encourages those involved in the social sciences (and more specifically environmental labour studies) to look closely at what critical design studies can offer. Likewise, White argues that proponents of critical design agendas and ecologically responsible design should pay more heed to empirical social scientific accounts of the human, political-economic and social realities of how change occurs in context.[48] Essentially, this calls for a merging of disciplinary knowledge and approaches.

On the one hand, nuanced progressive visions of ethical post-carbon transitions towards environmentally sustainable systems are stridently advocated by proponents of environmental labour studies (as well as in the social sciences more broadly). Likewise, theorists and researchers in critical design studies and sustainable design variously envision and design such transformations towards imagined sustainable and ethical futures. These separate efforts – in design and the social sciences – would appear to be aligned.[49] As readers of both design and social sciences literature, we have discerned a sense that despite this common ground, meaningful cross-communication between these disciplines is limited.[50]

White notes that despite the laudable ambition of sustainable design and critical design studies in recent years, "much of this work has surprisingly little to say about the politics of labour".[51] This gives us cause to ask: *who* does the work of transition, how will it be organised, what skills might it require, what does that work look like? As charted in our Introduction to *Working through Planetary Breakdown*, we acknowledge that the politics of "just transitions" is simultaneously ambitious, progressive, politicised, fractured and at times dysfunctional.[52] The same thing could be said of debates in critical design studies. Without it necessarily being our intention at the outset, this book, its companion volume, and the symposium that preceded it, all respond to this call to connect disciplines on the issues of climate change, labour, design and transition.

About this book: *Designing through Planetary Breakdown*

This collection is a grounded encapsulation of the productive connections that can emerge from a broad orientation towards design in the transition towards a decarbonised future. It particularly emphasises the significance of material knowledges, place-based specificity, manual and technical skills, and care and repair practices in the context of a planet that is precarious and rapidly

changing. Our more inclusive understanding of design emphasises its peripheries, drawing into focus many different types of labour and skill across spheres of production, consumption and discard that are involved in designing, transforming, maintaining, repairing and producing a more regenerative and resilient world.

This volume is divided into two thematic sections: *Skills and Capacities at Design's Edges* and *Care and Generative Practices*. The chapters shared here present design through critical and politically attuned dispositions, founded on concepts of care, repair and community. The following sections outline the included chapters, and their value in pointing towards how we might design through planetary breakdown in ways that are inclusive, practical and careful.

What this book doesn't do

We emphasise that many of the chapters in this collection do not tackle decarbonisation and climate issues "head on", but rather, demonstrate the activities that go on within, despite, and in response to a volatile world. Accordingly, we urge readers not to expect instructive chapters that tell us "how to design" for decarbonisation or sustainability, for instance. Empirical cases engage with ground-up examples in an inclusive manner, bringing in what might be seen as peripheral practices, and showing how and why they hold meaning, in terms of care, repair, generative practice and skill. Ultimately, no one should be discounted in the effort to salvage this broken planet.

Accordingly, there is a specificity to many of these essays. We have consciously selected a group of researchers who represent a variety of contexts, geographies, viewpoints and disciplinary alignments. We include researchers at a variety of career stages and seek especially to provide space for early-career researchers from the Global South. This has enabled us to provide a platform for perhaps "quieter" voices in design/environment/labour discourse. This is, in part, an acknowledgement that while much needed decarbonisation transitions are projects of enormous scope, scale and significance, the actual design and labour of the transition operate at different scales. As the chapters attest, everyday labour in our fractured planet will at times be detail-oriented, invisible, painstaking, laborious and layered with efforts to care for and repair environments and communities. This work often provides unexpected, resourceful solutions to real-world dilemmas. Small acts of material engagement are – of course – political acts.

On Part I: *Skills and capacities at design's edges*

Part I of this book situates specific skills and material knowledge within globalised systems of production, consumption and discard. Together, these five chapters highlight skills that are often overlooked in heterodox design

discourse, and which further open the potential for interrupting design's relationship with neoliberal capitalist production. The chapters in this section approach design and production from a standpoint that aligns with the conception of design we defined earlier. The empirical approaches used by these researchers ground the analysis in lived experience and specific geographical contexts.

We begin by coping with heat. In Chapter 1, Stephen Healy and Abby Mellick Lopes share insights from their long-term work with migrant and low-income communities, focusing on approaches to cooling urban public spaces. Their collaborative design approach foregrounds cross-cultural community expertise in urban heat adaptation. Western Sydney is a sprawling suburban region with particularly high risks in terms of climate impacts, such as flood, bushfire, smoke and urban heat. Recent analysis of summer temperatures in Sydney (between 1962 and 2021) reveals that Western Sydney temperatures are, on average, 5°C higher than suburbs closer to the coast, with one in 20 days in summer reaching 37.8°C or higher.[53] The use of collaborative design and action research – working closely with communities in Western Sydney – demonstrates practical community responses to living in dangerously warming places. Importantly, the chapter reframes the concept of "climate readiness" as an expression of community expertise, knowledge and skill.

In Chapter 2, Elise Hodson weaves together approaches from design and human geography to locate designers as potentially skilled analysts, able to play a role in advocating for, and designing, better environmental and labour practices across the supply chain. Hodson argues that adequately addressing designers' culpability in industrial production calls for both skills in sustainable production *and* skills in social design and participatory design. While distinct design disciplines tend to specialise in specific design methods (e.g. sustainable production or social design), Hodson contends that it is rare for these sub-disciplines to be meaningfully brought together. Accordingly, she presents examples where applied skills in ecologically responsible production are joined with social and participatory design methods, with results that have the genuine capacity to minimise impacts from manufacturing, to make visible labour supply chain issues and to reimagine power relations in decarbonising production contexts.

Cultural studies scholar Susan Luckman articulates the non-instrumental and intangible value of material production and craft skills in Chapter 3. Here, Luckman moves beyond orthodox political-economic and nationalistic arguments for the importance of locally manufactured products, looking instead to less tangible benefits of craft and repair skills, for example enhanced human well-being and sustainability. Drawing on a wide body of empirical research, Luckman's findings emphasise the cultural and human value of material production and craft, locating skills connected to care and repair in the contexts of the changing climate and the Covid-19 pandemic.

If design practices are to change in genuinely sustainable ways, then the task of educating future designers is crucial. In Chapter 4, design scholars Melisa Duque and Blanca Callén shift our understanding of what a design curriculum might look like when it is oriented around repair-led learning and practical skill development. Working through the disciplines of design anthropology, participatory design and STS (science and technology studies), this chapter draws on the case study of community repair events in Barcelona, known as Restart Parties, and ends by experimentally sharing a speculative design syllabus. Duque and Callén ask the reader to reflect on practice-led modes of learning, providing a convincing case for why repair skills must be central to design education – creating what they refer to as "knowledge-bridges" between academic and practical contexts.

Looking beyond the scale of community organising, the nation-state holds an important (and often overlooked) role not only in decarbonising economies but also in fostering social and technological practices that are future-oriented and ecologically responsible. In Chapter 5, by design scholars Ana Sofía López Guerrero and Marcos da Costa Braga, state intervention is examined through a recent historical study examining the role of the Cuban government during the Special Period (1991–2000). In order to manage extreme hardship during this period, the Cuban (socialist) state directly intervened in ways that fostered invention, repair, DIY, reuse and materials salvage. This, in turn, developed community skills and technical knowledge regarding repairability and technological reinvention. Evidently, the example of Cuba is unusual in the global context, however the chapter highlights community resourcefulness and the role of the state in calamitous circumstances. This example shows what becomes possible during extreme hardship, particularly with state support.

On Part II: *Care and generative practices*

Part II of this book links design practice with the complex environmental, social and geopolitical challenges facing the world today. It presents diverse ways of generatively making, designing and caring, in the context of planetary breakdown. Importantly, Part II frames *care* and *repair* as core design concepts and processes, rather than optional or marginal design considerations. That said, the concepts of care and repair are not engaged with uncritically, and always with a watchful eye for the predictable slide into nostalgia and feel-good mantras that can often accompany "care and repair" discourse. In this book, repair is both utterly practical as a design practice and an environmental response to excess waste, but it also figures as an educational framework and survival method.

This section opens with an important reminder that the nation-state of Australia was founded on land stolen from First Nations people. The destruction of Country through extraction, pollution and other forms

of environmental harm has a long connection not only to capitalistic exploitation but also to colonial exploitation, racism and dispossession. Chapter 6 brings the aforementioned Shannon Foster and Jo Paterson Kinniburgh into conversation with interdisciplinary design scholar Alexandra Crosby, in a generative exploration of the significance of First Nations approaches to rethinking and decolonising design. Foster and Kinniburgh reflect upon their critical spatial design practice – Bangawarra – working *with* Country to challenge hegemonic colonial disciplinary practices of understanding site and space in architecture. In particular, the conversation reflects upon the emotional labour entailed in being a First Nations design organisation that is called upon by government and private entities to "do the work" of First Nations recognition, consultation and storytelling. The sheer drain of participating in what can become corporate "box-ticking" exercises is unpacked with a frank openness and an acute understanding of the blurred boundaries between personal, political, community and environmental contexts. Bangawarra's work is conducted on *and with* Country, and always in communication with Elders.

Community participation comes into view again in the following chapter, through a different lens. In Chapter 7, by this book's co-editor Jesse Adams Stein, we learn how an informal craft collective coalesced around the task of saving an (almost) redundant piece of technology: a large jacquard loom. In consultation with weaver Ana Petidis and other members of the Loom Rescue Group, Stein tells the story of how the Loom Rescue Group did more than just salvage a loom from potentially ending up in a landfill: in the process they formed a community, with ambitions for a future of textile knowledge-sharing, "commoning" creative production. Stein contextualises this positive story within its less-than-ideal context, given the ways in which neoliberalised economic forces have punished vocational education, local manufacturing and creative labour. These themes are all the more startling given the loom at the centre of the story was, only 20 years prior, a strategic government investment in Australia's sovereign capability in textiles manufacturing and skills development: via a grant from the International Fibre Centre, funded by the Victorian state government.

As the climate crisis escalates the need for care labour, in Chapter 8 visual communication design scholars Jacquie Lorber-Kasunic and Kate Sweetapple develop design methods grounded in disability care labour processes and care worker perspectives. This chapter draws attention to the vital future questions of who we look after and how, and the attendant questions of labour in relation to those increasing care needs. Disability care is clearly an undervalued, invisible and overworked sector, in which complex needs are often communicated poorly across densely bureaucratic, financialised and highly institutionalised contexts. The role of design – in preventing worker overload and authentically communicating clients' needs – therefore plays a practical and potentially transformative role that attends both to the needs of those labouring in care sectors, and those being cared for.

Shifting beyond Australia, in Chapter 9 design scholar Kestity Pringgoharjono and the aforementioned Crosby draw on empirical research in Central Java, Indonesia, to reveal design strategies that combine traditional weaving skills and textile waste materials. Employing a "follow-the-thing" approach, the authors trace woven products from a boutique store in Sydney, right back to their origins in a work-skills program at a police custodial facility, and a textiles waste redirection project. Their approach highlights the utility and economic value of craft skills and so-called "traditional" methods, which have a close relationship to small-scale production in Indonesia, where 99 percent of businesses are classified as micro, small or medium size.[54] Pringgoharjono and Crosby take up the challenge of design researchers working in relation to sustainability, by putting "flesh on the bones" of circular economy concepts, and providing place-based approaches to examining design in global supply chains.

Kate Scardifield, in Chapter 10, examines the emergence of biodesign as a transdisciplinary field responding to pressing environmental challenges, including plastics pollution and decarbonisation. Scardifield – herself an artist and designer who uses novel bio-materials – here turns her analytical lens to the work of other artists and designers: Jessie French, Alia Parker, and Megan Cope. In broad terms, Scardifield is interested in what a transition from fossil-derived materials to regenerative, bio-based production might look like. How can design genuinely engage with bio-materials in collaborative frameworks that "promote regeneration, embed repair, that are respectful of Country, and create opportunities for reciprocity to emerge through process"? The materials-led work by French, Parker and Cope demonstrates one way in which a granular, careful and ecologically informed design approach might be enacted in practice.

This collection ends in a cemetery, sitting quietly with human grief, vulnerable materials and masses of mud. In Chapter 11, the concerns of care, craft skill, labour and materials knowledge are elegantly drawn together by anthropologist and conservation stonemason Daniel Tranter-Santoso. Tranter-Santoso combined ethnographic research with hands-on learning, undertaking a stone-masonry apprenticeship at Rookwood Necropolis, Sydney, the largest cemetery in the Southern Hemisphere. His apprenticeship coincided with unprecedented heavy rainfall in Sydney over a three-year *La Niña* weather event, which transformed the fields of Rookwood into a watery swamp and mudscape. This extended *La Niña* event is but one example of the sorts of weather conditions that so many workers are already facing, and will increasingly face, in the near future. The stonemasons' work extended beyond routine conservation to crisis management, as they navigated waterlogged ground, and sensitively maintained Rookwood as a "consolationscape". Tranter-Santoso cultivates a dual literacy: craft skill and ethical consideration for mourning families, both made far more difficult by physical labour in an increasingly hostile climate.

Editor positioning: Across disciplines, and at design's edges

As noted, his collection engages closely with approaches at design's "edges" – incorporating what is sometimes seen as "marginal" design practices, such as repair, maintenance, care and craft. Yet we see these practices as revealing critical intersections where design's future is already being forged. As Ilaria Vanni and Crosby articulate, edges signify "a transition zone between different systems", generating "rich possibilities" for research.[55] In their own work, Vanni and Crosby find ecological "boundary zones" become sites and spaces of increased biodiversity, where "species from both systems can thrive at the interface".[56]

What does it mean to locate our work at "design's edges"? As collection editors we are both, to some extent, insiders to design discourse and practice. Yet our own innate interdisciplinarity also positions us as outsiders. For Carr, training in human geography, planning and architecture brings a tendency – and often a compulsion – to work fluidly across spatial scales. An attunement to integrating the social and technical was also forged through this experience, but perhaps most formatively through Carr beginning her working life as an apprentice electrician at Australia's largest steelworks. Stein undertook a PhD in design, but her research frequently steps into other disciplines and areas, particularly labour history, vocational education and industrial craft. Individually and collectively, we share a deep empirical interest in working lives. This research background compels us to bring both historical and social perspectives and methods to our examination of design (in its expanded sense). Our interdisciplinarity – reflected in the *All Hands on Deck* project – has emerged as a kind of unforced evolution of research, not as a pre-determined goal of achieving interdisciplinarity for its own sake. While it is true that inter-disciplinarity, transdisciplinarity and cross-disciplinarity are buzzwords of our present academic era, our own positions in relation to academic disciplinary boundaries have always been led by the empirical material, by events out in the "real world", not by trends or institutional pressures.

As the chapters in this collection attest, it is important to "follow the empirical material" and engage with the issues it brings forth, situating human experience within cultural, spatial and political-economic contexts. This may mean straying beyond expected disciplinary boundaries. We make no apologies for this. With challenges as enormous as those presented by climate change, social and economic upheaval, and the urgent need for decarbonisation, it is now abundantly clear that disciplines, professions and skilled practitioners must work together, with "all hands on deck", communicating beyond isolated fields. This book, and our work more generally, strives to open those communication channels in ways that, we hope, remain refreshingly practical, realistic and politically engaged.

As noted earlier, we acknowledge that design has a longstanding relation-ship with future-destroying capital accumulation, ever-growing over-production and waste. But, as this collection attests, we continue to value and draw upon

design chiefly because it opens different avenues of understanding and change, and it allows the appreciation of undervalued knowledge, skills and dispositions. To talk of design necessarily includes an awareness of materiality, of manual/technical and craft-based skill, of interconnected systems, of visual, spatial and haptic phenomena, and of complex human relationships to non-human elements (things, technologies, systems, environments, Country). To speak of design also draws out some subtle but important considerations that are often missed in social scientific, economic or indeed in historical accounts of labour transitions. Namely, to consider the process of design*ing* is to consider practice at the level of human experience. In this way, design helps us to empirically account for "all hands on deck". It helps us to think practically and relationally over different timescales and across diverse geographies about whose skilled hands will be needed to deal with – and indeed cope with – planetary breakdown.

Open Access Acknowledgement

Open Access for this chapter is funded by the Australian Government through Stein's Australian Research Council's Discovery Early Career Researcher Award (DE210100158).

Notes

1 Quotation from Ritter, "A Year on from the Northern Rivers Floods".
2 IPCC Core Writing Team, *AR6 Synthesis Report*; Slezak, "IPCC Climate Scientists Issue 'A Survival Guide for Humanity'".
3 IPCC Core Writing Team, *AR6 Synthesis Report*, 21.
4 Carr & Stein, eds., *Working Through Planetary Breakdown*.
5 Manzini, *Design, When Everybody Designs*.
6 Country is an Indigenous Australian term reflecting 'connections to land, sea and sky arising from unheralded lengths of occupation' (tebrakunna country, Lee and Eversole, "Rethinking the Regions", 1513).
7 See for example: Firesticks Alliance, *Guide for Developing a Fire Management Plan*; Government Architect NSW, *Connecting with Country*.
8 See Chapter 6 in this book: Foster and Kinniburgh in conversation with Crosby, "Bangawarra Ngeeyinee Bayaba".
9 Huber, *Climate Change as Class War*, 13–14; Supran and Oreskes, "Rhetoric and Frame Analysis of ExxonMobil's Climate Change Communications".
10 White, "Just Transitions/Design for Transitions".
11 For discussions of 'trash' in design and design history, see for example Twemlow, "Design and the Deep Future".
12 Boehnert, *Design, Ecology, Politics*, 1.
13 Boehnert, *Design, Ecology, Politics*, 1.
14 Julier, *Economies of Design*, 2.
15 See for example Fry, *Defuturing*, 3.
16 Julier, *Economies of Design*, 5; Stern & Siegelbaum, "Special Issue: Design and Neoliberalism".
17 Further discussed in Crosby and Stein, "Repair".

18 White, "Labour-Centred Design for Sustainable and Just Transitions".
19 White, "Ecological Democracy, Just Transitions and a Political Ecology of Design".
20 Carr and Stein, "Introduction: Skill, Industrial Transformation and Workers".
21 See Chapter 2 of this book: Hodson, "Geographies of Responsibility".
22 White, "The Institutional Gap in Design Studies". See also: Kaygan & Demir, "The Cost of 'Free' in Freelance Industrial Design Work".
23 Manzini, *Design, When Everybody Designs*.
24 Manzini, *Design, When Everybody Designs*, 37.
25 Campbell, "Lay Designers"; Beegan and Atkinson, "Professionalism, Amateurism and the Boundaries of Design"; Stein, "Hidden Between Craft and Industry".
26 This is a critical reference to classical liberal economic theorists such as Friedrich Hayek, who argued that market economies have a spontaneous order.
27 Nocek and Fry, "Design in Crisis, Introducing a Problematic".
28 Julier, *Economies of Design*.
29 Julier, *Economies of Design*; White, "The Institutional Gap".
30 Crofts, "Community Led Transition Processes".
31 Boehnert, *Design, Ecology, Politics*, Julier, *Economies of Design*.
32 Boehnert, *Design, Ecology, Politics*, 15.
33 Julier, *Economies of Design*, 177.
34 White, "Labour-Centred Design".
35 Boehnert, *Design, Ecology, Politics*, 21.
36 Irwin, "Transition Design"; Irwin, Kossoff and Tonkinwise, "Transition Design Provocation".
37 Boehnert, "Ecocene Design Economies", 1743.
38 Fry, *Design as Politics*, vii.
39 Nocek & Fry, "Design in Crisis, Introducing a Problematic", 2.
40 But see our discussion of 'just transitions' in Carr and Stein, "Introduction: Skill, Industrial Transformation and Workers".
41 Boehnert, "Anthropocene Economics and Design".
42 Gilmore and the Visual Stories Team, "Anatomy of the Lismore Disaster".
43 MacKenzie and Jones, "Multiple Landslides in Main Arm".
44 Isaacs, "'Next level destruction'".
45 These observations follow discussions with NSW Northern Rivers locals and academics Jeanti St Clair, Adele Wessell and Mary Spongberg. More recently, design involvement in the region has become more formalised, through examples such as the Living Lab Northern Rivers.
46 See for example: Stein *Industrial Craft in Australia*; Carr "Maintenance and Repair beyond the Perimeter of the Plant".
47 White, "Metaphors, Hybridity, Failure and Work", 42.
48 White, "Metaphors, Hybridity".
49 White, "Ecological Democracy", 3.
50 There are of course exceptions. This "dialogue" was one example where nuanced and in-depth interdisciplinary cross-communication did emerge: Carr, "Repair and Care"; with commentary responses: Osborne, "Collective Care and Climate Repair"; Stein, "Unresolved Tensions in Green Transitions"; Barca, "Dimensions of Repair Work".
51 White, "Labour-Centred Design", 824–25.
52 Carr and Stein, "Introduction: Skill, Industrial Transformation and Workers".
53 Speer, et. al., "Why Western Sydney is Feeling the Heat from Climate Change".
54 ILO, *Financing Small Business in Indonesia*.
55 Vanni & Crosby, "Edge", 164.
56 Vanni & Crosby, "Edge", 164.

Bibliography

Barca, Stefania. "Dimensions of Repair Work." *Dialogues in Human Geography* 13, no. 2 (2023): 255–58.

Beegan, Gerry, and Paul Atkinson. "Professionalism, Amateurism and the Boundaries of Design." *Journal of Design History* 21, no. 4 (2008): 305–13.

Boehnert, Joanna. *Design, Ecology, Politics: Towards the Ecocene*. London & New York: Bloomsbury, 2018a.

Boehnert, Joanna. "Anthropocene Economics and Design: Heterodox Economics for Design Transitions." *She Ji: The Journal of Design, Economics and Innovation* 4, no. 4 (2018b): 355–74.

Boehnert, Joanna. "Ecocene Design Economies: Three Ecologies of Systems Transitions." *Running with Scissors, 13th International Conference of the EAD* (University of Dundee, 10–12 April 2019).

Campbell, Angus Donald. "Lay Designers: Grassroots Innovation for Appropriate Change." *Design Issues* 33, no. 1 (2017): 30–47.

Carr, Chantel. "Maintenance and Repair beyond the Perimeter of the Plant: Linking Industrial Labour and the Home." *Transactions of the Institute of British Geographers* 42, no. 4 (2017): 642–54.

Carr, Chantel. "Repair and Care: Locating the Work of Climate Crisis." *Dialogues in Human Geography* 13, no. 2 (2023): 221–39.

Carr, Chantel, Chris Gibson, Elyse Stanes, and Andrew Warren. "Work, Value and Space: Three Key Questions of Making for the Anthropocene." In *Geographies of Making, Craft and Creativity*, edited by Laura Price and Harriet Hawkins, 94–107. Abingdon: Routledge, 2018.

Carr, Chantel, and Jesse Adams Stein, "Introduction: Skill, Industrial Transformation and Workers." In *Working through Planetary Breakdown: Labour, Skill and the Changing Climate*. London: Routledge, 2025.

Crofts, Kimberley. "Community Led Transition Processes." Public talk. Social Design Sydney. 2022. https://socialdesignsydney.com/community-led-transition-processes-with-kimberley-crofts/

Crosby, Alexandra, and Jesse Adams Stein. "Repair." *Environmental Humanities* 12, no. 1 (2020): 179–85.

Firesticks Alliance. *Guide for Developing a Fire Management Plan*. Firesticks Alliance with the Nature Conservation Council and the Australian Government, 2014. www.firesticks.org.au/education/resources/#:~:text=Fire%20Planning%20Guide%3A-,Link%20to%20Guide,-A%20Fire%20Planning

Fry, Tony. *Design as Politics*. Oxford & New York: Berg, 2011.

Fry, Tony. *Defuturing, a New Design Philosophy*. London: Bloomsbury, 2020.

Gilmore, Heath, and the Visual Stories Team. "Anatomy of the Lismore Disaster." *Sydney Morning Herald*, 30 June 2022. www.smh.com.au/interactive/2022/lismore-flooding

Government Architect NSW, in consultation with Aboriginal consultants and Advisory Panel. *Connecting with Country*. Sydney: NSW State Government, 2023. Online: https://www.governmentarchitect.nsw.gov.au/resources/ga/media/files/ga/case-studies/connecting-with-country-framework.pdf?la=en

Huber, Matthew T. *Climate Change as Class War*. London & New York: Verso, 2022.

International Labour Organization (ILO). *Financing Small Business in Indonesia*. ILO, 2019. www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/publication/wcms_695134.pdf

IPCC Core Writing Team. *AR6 Synthesis Report: Climate Change* 2023. Intergovernmental Panel on Climate Change. www.ipcc.ch/report/sixth-assessment-report-cycle

Irwin, Terry. "Transition Design: A Proposal for a New Area of Design Practice, Study, and Research." *Design and Culture* 7, no. 2 (2015): 229–46.

Irwin, Terry, Gideon Kossoff, and Cameron Tonkinwise. "Transition Design Provocation." *Design Philosophy Papers* 13, no. 1 (2015): 3–11.

Isaacs, Mark. "'Next Level Destruction': NSW Residents Detail the Moments Floods Devastated Their Homes." *The Guardian*, 6 March 2022. www.theguardian.com/australia-news/2022/mar/06/next-level-destruction-nsw-residents-detail-the-moments-floods-devastated-their-homes

Julier, Guy. *Economies of Design*. Los Angeles & London: Sage, 2017.

Kaygan, Pınar, and Özümcan Demir. "The Cost of 'Free' in Freelance Industrial Design Work: The Case of Turkey." *The Design Journal* 20, no. 4 (2017): 493–510.

Living Lab Northern Rivers, Lismore. Accessed 21 November 2024. https://www.llnr.com.au/about

MacKenzie, Bruce, and Alexandra Jones. "Multiple landslides in Main Arm send house falling down mountainside." *ABC News*, 2 March 2022. www.abc.net.au/news/2022-03-02/main-arm-sets-up-pulley-to-receive-goods-after-flood/100876716

Manzini, Ezio. *Design, When Everybody Designs*. Translated by Rachel Coad. Cambridge MA & London: MIT Press, 2015.

Nocek, Adam, and Tony Fry, eds. *Design in Crisis*. London & New York: Routledge, 2021.

Osborne, Natalie. "Collective Care and Climate Repair." *Dialogues in Human Geography* 13, no. 2, (2023): 240–43.

Ritter, David. "A Year on from the Northern Rivers Floods, Stories of Community, Displacement and Recovery Reflect a Deep Impatience for Action." *Russh*, 12 April 2023. www.russh.com/northern-rivers-portraits-aftermath-greenpeace/

Slezak, Michael. "IPCC Climate Scientists Issue 'A Survival Guide for Humanity,' Warning Window Closing to Reduce Emissions." *ABC News*, 21 March 2023. www.abc.net.au/news/2023-03-21/ipcc-report-how-to-keep-global-warming-below-1-5-degrees/102112836

Speer, Milton, et al. "Why Western Sydney Is Feeling the Heat from Climate Change More Than the Rest of the City." *The Conversation*, 27 March 2023. https://theconversation.com/why-western-sydney-is-feeling-the-heat-from-climate-change-more-than-the-rest-of-the-city-201477

Stein, Jesse Adams. "Hidden Between Craft and Industry: Engineering Patternmakers' Design Knowledge." *Journal of Design History* 32, no. 3 (2019): 280–303.

Stein, Jesse Adams. "When Manufacturing Workers Make Sculpture: Creative Pathways in the Context of Australian Deindustrialisation." *Australian and New Zealand Journal of Art* 20, no. 2 (2020): 189–212.

Stein, Jesse Adams. *Industrial Craft in Australia*. Cham: Palgrave Macmillan/Springer, 2021.

Stein, Jesse Adams. "Unresolved Tensions in Green Transitions: Retraining and the Question of 'How'?" *Dialogues in Human Geography* 13, no. 2 (2023): 244–48.

Stein, Jesse Adams. "'Creative Technicians' and 'Technical Creatives'". In *Working through Planetary Breakdown: Labour, Skill and the Changing Climate*, edited by Chantel Carr and Jesse Adams Stein. London: Routledge, 2025.

Stein, Jesse Adams, and Chantel Carr. *All Hands on Deck*, symposium website, 2022–2023. https://allhandsondeck2023.com

Stern, Arden, and Sami Siegelbaum. "Special Issue: Design and Neoliberalism." *Design and Culture* 11, no. 3 (2019): 265–77.

Supran, Geoffrey, and Naomi Oreskes. "Rhetoric and Frame Analysis of ExxonMobil's Climate Change Communications." *One Earth* 4, no. 5 (2021): 696–719.

tebrakunna country, Emma Lee, and Robyn Eversole. "Rethinking the Regions: Indigenous Peoples and Regional Development." *Regional Studies* 53, no. 11 (2019): 1509–1519.

Twemlow, Alice. *Design and the Deep Future*, KABK Design Lectorate. https://www.kabk.nl/en/lectorates/design/design-and-the-deep-future

Vanni, Ilaria, and Alexandra Crosby. "Edge." *Environmental Humanities* 15, no. 1 (2023): 164.

White, Damian. "Metaphors, Hybridity, Failure and Work: A Sympathetic Appraisal of Transitional Design." *Design Philosophy Papers* 13, no. 1 (2015): 39–50.

White, Damian. "Ecological Democracy, Just Transitions and a Political Ecology of Design." *Environmental Values* 28, no. 1 (2019): 31–53.

White, Damian. "Just Transitions/Design for Transitions: Preliminary Notes on a Design Politics for a Green New Deal." *Capitalism Nature Socialism* 31, no. 2 (2020): 20–39.

White, Damian. "Labour-Centred Design for Sustainable and Just Transitions." In *The Palgrave Handbook of Environmental Labour Studies*, edited by Nora Räthzel, Dimitris Stevis, and David Uzzell, 2021.

White, Damian. "The Institutional Gap in Design Studies." In *Design in Crisis*, edited by Adam Nocek and Tony Fry, 199–217. London & New York: Routledge.