Commons in Design

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Christine Schranz (ed.)

Valiz, Amsterdam

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Preface

The retreat of industrial societies, the scarcity of resources, climate change, and the digitalization of everyday life are fuelling the economy of sharing, swapping, and lending—all of which are in some way linked to manifestations of a culture of commoning. In addition to the economic incentive of sharing, we are witnessing a change in values characterized by conviviality; community is emerging in creative societies. In this context, it is important to distinguish between the economic incentive of sharing, which is negatively reciprocal (as seen in innovative disruptive business models such as Airbnb, Uber, or Spotify) and sharing as in a communal satisfaction of needs. The latter includes sharing in the sense of ecological sustainability and egalitarian co-operation, which is evident in collective-driven services such as food sharing or the free encyclopaedia Wikipedia. This raises the question of the extent to which the Internet can still be considered a commons today. The idealism of the early Internet (which emerged in the spirit of progressive anarchism and manifested itself in the continuing success story of Wikipedia) has given way to a mostly disruptive technology with payment walls, economization of data, and surveillance capitalism.

Testing Models for the Use of Commons within Design Processes

This publication, based on the research project 'Commons in Design' and the conference with the same name,[1]

1 The conference 'Commons in Design' was held at FHNW Academy of Art and Design in Basel, Switzerland, 15–17 February 2023.

tests models that negotiate the question of the use of commons within design processes. The focus is on understanding the meaning and impact of commons in design, particularly knowledge-based peer commons.[2] This coincides with the repositioning of designers and the self-understanding of their own discipline, ways of working, and education. In our research, we understand commons as community-based processes that use, collectively manage, and organize generally accessible resources.[3] So far, commons-based studies in the field of design are not widely known, especially in the domain of digitally networked design culture and working practice.[4] 'Commons in Design' makes an important contribution to design research and provides a perspective on how the principles of open source and open design can be embedded in an open-design framework and be made productive. In particular, it analyzes networked, participatory, and open procedures based on the commons and commoning.

2 Peer-to-peer collaboration in the design process such as sharing designs, workspaces, infrastructures, techniques etc.

3 Elinor Ostrom, *Governing the Commons: The Evaluation of Institutions for Collective Actions*, Cambridge University Press, 1990; Silke Helfrich and David Bollier, *Patterns of Commoning*, The Commons Strategies Group, 2015; Silke Helfrich and David Bollier (eds.), *Free, Fair, and Alive: The Insurgent Power of the Commons*, New Society Publishers, 2019.

4 See also, among others: Bas van Abel, Lucas Evers, Roel Klaasen, and Peter Troxler, *Open Design Now: Why Design Cannot Remain Exclusive*, BIS Publishers, 2011; Leon Cruickshank, *Open Design and Innovation: Facilitating Design for Everyone*, Gower Publishing, 2014; Pelle Ehn, Elisabet M. Nilsson, and Richard Topgaard, *Making Futures: Marginal Notes on Innovation, Design, and Democracy*, The MIT Press, 2014; Peter Troxler, 'Building Open. Design as a Commons', in Loes Bogers and Letizia Chiappini (eds.), *The Critical Makers Reader: (Un)Learning Technology*, Institute of Network Cultures, 2019, 218.

The changing role of designers also figures highly in this book and its related research project and conference. There are great opportunities for sharing in workplaces, infrastructure, and techniques that promise increased freedom and flexibility in design and production processes. However, such living and working environments are often associated with negative effects that the creative disciplines are all too familiar with, including a precarious work status, self-exploitation, and lack of social safeguards. While pessimistic future scenarios predict a decline in employment in favour of machines and technology, other voices distinguish between the manufacturing professions and social or creative professions, which are likely to experience a boom. This opens up the question: What role does the commons play in this altered geography in the labour market? Does it offer an alternative model for production and consumption that can challenge the hegemonies of efficiency or competitive models of consolidation? And what is the position of design and designers in these changing constellations?

Introduction

Commons for Design, Design for Commons

Christine Schranz

Christine Schranz is Head of Research at the Institute Contemporary Design Practices (ICDP) of FHNW Academy of Art and Design in Basel. In this role, she is responsible for the development of research across multiple institutes. She holds a doctorate in Theatre, Film, and Media Studies from the University of Vienna and a diploma in Visual Communication from Hochschule für Gestaltung Zürich (now ZHdK). In academia, she was formerly affiliated with the Winchester School of Art at the University of Southampton, the Zeppelin University (Friedrichshafen), TU Berlin, and other institutes of FHNW Academy of Art and Design (Basel). Her research interests include common-based design and the changing role of (female) designers in the wake of digitalization; she has published several books on a new understanding of the discipline. She has a broad knowledge of design methodology and strategies and currently teaches at various art schools in Switzerland and abroad.

> ‘Does the flap of a butterfly’s wings in Brazil set off a tornado in Texas?’
> Edward Norton Lorenz

The Anthropocene era, modernity, and capitalism have combined into longstanding, multi-layered, and threatening sources of crises that burden our coexistence. Capitalism has brought prosperity (to some), markets, and financial systems, but also problems such as over-indebtedness, greed, and sovereign bankruptcies. Furthermore, capitalism sees the ‘other’ first and foremost as a consumer or producer: this represents a shift away from social values that accept the sometimes slow, messy, or chaotic social forms of exchange (bartering etc.) and towards anonymous economic exchanges (indirect purchasing). We are faced with the increasing erasure of the middle class, the disintegration of social and community bonds, and the loss of solidarity within communities. In addition, information technologies and market structures have changed the entire economic system with profit as their overriding goal, regardless of the social or ecological costs.

As we enter an age of scarcity, with the continued overburdening of the environment and the realizations of our ecological footprint, a struggle for distribution is also coming into focus. Current and future challenges include a scarcity of goods and perhaps also essential services, the need to reduce our environmental impact, and the imperative to re-orient our value systems away from the accumulation of wealth. In this context, we need to create a greater sense of community, develop deeper forms of social cohesion and solidarity, and foster forms of economic and social justice. This book

explores how the commons or acts of commoning can make a critical contribution to this and how design can have an important role in thought and practice therein. 'Design for Commons' (participatory, collaborative, transparent and inclusive design based on open source and open design) has the power to design and produce independently of the market, manufacturers, and investors. Thus, design-commons have the potential to sustainably change the environment, contribute to stability and balance, and emancipate from the shackles of the market.

What the Commons Are

The commons is a term derived from the Latin words *cum* [with, connects something to] and *munus* [service, duty, obligation, sometimes gift]. The commons indicate generally accessible resources such as water, seeds, code, creative works, and culture that are used, organized, and managed collectively. Commons thus emerge through self-organized processes and from shared action (commoning). Well known examples of socially supported commons projects are the free encyclopaedia Wikipedia or the open maps of 'OpenStreetMap'. One of the reasons why these projects are so successful is that they rely on the participation of users and are self-regulating, constantly revised, and further developed collectively.

The term commons came into focus in the work of American political scientist Elinor Ostrom (1933–2012), who became the first woman to be awarded the Nobel Prize in Economic Sciences in 2009. In her

research, Ostrom is concerned with self-organization or successful collective action in the case of scarce common goods that are used collectively, so-called common pool resources. She published her findings in her text *Governing the Commons. The Evaluation of Institutions for Collective Actions* (1990), with which she also became internationally known. In her later work *Beyond Markets and States: Polycentric Governance of Complex Economic Systems*[1] Ostrom challenges the prevailing economic model that only the market and the state are capable of successfully managing commons.

Through her research, Ostrom contradicts the notion of 'The Tragedy of the Commons' coined by the American ecologist Garrett Hardin in 1968, whereby it is assumed that generally accessible goods are over-exploited, i.e., destroyed, and thus that a common use of goods is impossible. For Hardin, free access to finite resources inevitably leads to their overuse; for example, a common pasture on which more and more herds are driven and which is accessible to all will inevitably lead to the meadow being overused.

In a database maintained by the Center for the Study of Institutional Diversity, Ostrom collected over 1000 case studies that successfully demonstrate the opposite (the database includes case studies of successful collective use of scarce commons, such as the collective management of cattle herds in the Alpine village of Törbel in the Valais, Switzerland). In doing so, Ostrom proves that people worldwide are capable of making

1 **Elinor Ostrom, 'Beyond Markets and States: Polycentric Governance of Complex Economic Systems', in Karl Grandin (ed.), *The Nobel Prizes*, Prize Lecture, 8 December 2009, Nobel Foundation, 2010, 408–444.**

agreements, co-operating, and communicating to use commons in a sustainable way.

One explanation for the failure of the commons in the above example would be that the common pasture is not a commons and, unlike the example in Switzerland, the owners proceed anonymously and without knowledge of the actions of others. Hardin's tragedy of the commons has been widely criticized, and even Hardin later had to admit that his example shows an unregulated commons.

From her worldwide research on community management of water, pastures, fish stocks, and forests, Ostrom developed design principles that must be in place in order to co-operate sustainably and successfully with one another and to permanently conserve common-pool resources in the sense of the commons:

1. Clearly and defined boundaries;
2. Coherence, conformity with local-cultural conditions;
3. Collective decisions;
4. Monitoring, supervision of the commons goods and users;
5. Graduated sanctions for rule violations;
6. Conflict resolution mechanisms;
7. Recognition of rights to organize;
8. Embedded institutions.[2]

More recent commoning literature focuses on the dynamic, relational, social, and negotiated processes associated with the commons, emphasizing the verb

2 Elinor Ostrom, 'Eight Design Principles for Successful Commons', in Helfrich and Bollier (eds.), *Patterns of Commoning*, www.patternsofcommoning.org/uncategorized/eight-design-principles-for-successful-commons/, accessed 7 June 2023.

'to common'. In the German-speaking world, commoning has become known in particular through the German activist and commons researcher Silke Helfrich (1967–2021). In collaboration with the American commons researcher David Bollier, her co-authored publications *Patterns of Commoning* (2015) and *Free, Fair, and Alive: The Insurgent Power of the Commons* (2019) shed light on the social processes and patterns that emerge from commoning as well as the expansion of traditional commons into knowledge commons such as knowledge production and knowledge sharing. In particular, they have conducted research on contemporary understandings of knowledge commons including digital commons (intangible modern common property) such as open use, free licenses, peer-to-peer production, etc.

For their pattern language of commoning, Helfrich and Bollier were inspired by the theoretical and pattern language of the architect Christopher Alexander, who published together with Sara Ishikawa and Murray Silverstein *A Pattern Language* (1977).[3] In this work, the authors conceptualize design processes as universal design or design patterns:

> The path to patterns consists in starting with practical experience and using it as the basis for elaborating useful experiential knowledge in a joint process, and reflecting on it, refining it, and deepening it with reference to theory.[4]

3 Christopher Alexander, ***A Pattern Language: Towns, Buildings, Construction***, Oxford University Press, 1977.

4 Helmut Leitner, 'Working with Patterns: An Introduction', in Helfrich and Bollier (eds.), ***Patterns of Commoning***, www.patternsofcommoning.org/working-with-patterns-an-introduction/, accessed 7 June 2023.

Important basic principles for this process are:

1. Participatory design in which those affected themselves become co-creators;
2. Increasing creativity and self-organization;
3. Liveliness of the system in terms of sustainability and resilience; and
4. Design without profit maximization.[5]

An example of a pattern of commoning is WikiHouse, an open-source project to design and build a house that defines basic principles such as: sharing knowledge globally, producing locally, using open standards and licenses, allowing for components to be repaired and modified, and so on.[6]

Commons figure highly in current discourses critiquing capitalism and in protests against capitalist relations and value practices in the Western world. Intellectuals and activists are putting forward concepts of what a world beyond capitalism might look like, all of which turn to commons, peer production, and sharing economies. In the German-speaking world, for example, Maja Göpel offers the concept of a post-growth economy through her work in *Rethinking Our World: An Invitation to Rescue our Future*.[7] In the Anglo-Saxon world, Jeremy Rifkin discusses a possible postmaterialist system without market, capital, and property in *Zero Marginal Cost Society. The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism*.[8]

5 Ibid.

6 'Open Systems Lab', www.opensystemslab.io, accessed 2 June 2023.

7 Maja Göpel, *Rethinking Our World: An Invitation to Rescue our Future*, Scribe Publications, 2023.

8 Jeremy Rifkin, *Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism*, St. Martin's Press, 2014.

The English economics journalist Paul Mason proposes a possible post-economic order in *PostCapitalism: A Guide to Our Future*,[9] seeing collaborative peer production as a possibility that can replace capitalism: 'Goods, services, and organizations are appearing that no longer respond to the dictates of the market and the managerial hierarchy'.[10] For this, he cites commons products such as Wikipedia, Linux, or OSM (free to use, no profit possible, collaborative processes, no competition); Wikipedia, for example, caused the revenues of advertising wastelands to shrink. Mason continues:

> Almost unnoticed, in the niches and hollows of the market system, whole swathes of economic life are beginning to move to a different rhythm. Parallel currencies, time banks, cooperatives, and self-managed spaces have proliferated, barely noticed by the economics profession, and often as a direct result of the shattering of old structures after the 2008 crisis.[11]

Such collaborative, mostly bottom-up organized commons support communal and rural life projects against top-down design methods of the modern age. The success of such collaborative peer production was demonstrated by the 'Haiti Map',[12] which was created within forty-eight hours of the devastating earthquake in Port-au-Prince in 2010. A high-resolution satellite

9 Paul Mason, ***PostCapitalism: A Guide to Our Future***, Penguin Books, 2016.
10 Mason, ***PostCapitalism***, XV.
11 Ibid, XV.
12 Haiti map, 2010, www.hotosm.org/updates/haiti-10-years-later-growth-of-a-crisis-mapping-community/, accessed 2 June 2023.

image was usable just a few hours after the earthquake and, as a result, several hundred volunteers supplemented the online map with life-saving information in only a few days.[13]

In summarizing what commons are, perhaps the most important fact is the realization that commons are not, they are made. Another important realization is that commons are an alternative to capitalism and thus are people and nature friendly.

Design: a Critical Field of Practice in its Own Right?

In its strong alliance with modernity, design has been linked to the widespread production of mass- produced goods void of context or cultural specificity. However, this has been clawed back to some extent by certain practices within design that seek to relocalize and recontextualise creative production as place-based or culture-based. When we speak of the commons we think of the local, the sometimes hyper-specific realities of a space, a group of individuals, and the nexus that brings these two together. Design has historically served markets or a neoliberal environment and followed the concept of top-down value chains of industrialization. However, with the emancipation of design from craft/maker (crafts) to mass production (professional) to

13 See: Christine Schranz, 'Commons for the Cartography: How Social Computing Changes the Design of Interfaces', *Interface Critique-Journals 1*, 2018, 168–175, (DOI: 10.11588/ic.2018.0.44740).

post-professional (everyone), bottom-up value chains have increased.

The expansion of the concept of commons from traditional commons (referring to common goods such as pasture, forests, water, and so on) to knowledge commons (in the sense of intangible goods such as free software, free content, free access) marks a change in the self-image of design and designers. It emphasizes the potential for designers to share designs, workspaces, infrastructures, techniques, etc., promising greater agility in the design and production process as well as more flexible conditions for designers. What do the commons and commoning imply for the design discipline? How does this change the role and responsibility of designers?

The rapid rise of design as a design and knowledge discipline[14] (referring to the evolution of design from industrialization to the current social hype of 'design for everyone' focused on the notion of 'we are all designers') calls for designers to take responsibility and a critical position and attitude in their work. Design in its transformative capacity[15] has the responsibility to develop innovative applications and concepts to promote a new understanding of technology and address concerns and fears over control, dependency, and manipulation that accompany change. Already at the beginning of design research in the 1960s, interest shifted from product and form design to the integration of human needs. Human-centred

14 See: Claudia Mareis, *Design als Wissenskultur: Interferenzen zwischen Design- und Wissensdiskursen seit 1960*, transcript, 2011.

15 See: Markus Caspers, *Design und Transformation: Wie wir unsere Zukunft nachhaltig gestalten*, transcript, 2023; Bernd Sommer and Harald Welzer, *Transformationsdesign: Wege in eine zukunftsfähige Moderne*, Oekom, 2014.

design[16] formed a design concept that is still carried out today. Another focus is that of design for entirely different living environments such as animals and plants.[17]

Following the dwindling trust in the application of current economic models as well as with the success of disruptive business models and technologies, it is a prime moment for the design discipline to question and reposition itself vis-à-vis the commons. Despite design being co-opted in current economic models of hyper production and consumption, it is also increasingly becoming self-aware, critical,[18] and even more of a speculative or political discipline.[19] Through critical questioning (what if) and speculative experiments,[20] social frameworks are tested, discarded, and interrogated along a design-centred perspective. In such a way,

16 Klaus Krippendorff, *Die semantische Wende: Eine neue Grundlage für Design*, Schriften zur Gestaltung, Birkhäuser, 2012; see also Victor Papanek, *Design for the Real World: Human Ecology and Social Chance*, MIT Press, 1985; Richard Sennett, *The Craftsman*, Yale University Press, 2008.

17 See among others: Beatriz Colomina and Mark Wigley, *Are We Human? Notes on an Archeology of Design*, Lars Müller Publishers, 2016; Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, Duke University Press, 2016.

18 See among others: Claudia Banz, *Social Design: Gestalten für die Transformation der Gesellschaft* (Design 6), transcript, 2016); Friedrich von Borries, *Weltentwerfen: Eine politische Designtheorie,* Suhrkamp, 2017.

19 Papanek, *Design for the Real World*; Lucius Burckhardt, ed. by Jesko Fezer und Martin Schmitz, *Wer plant die Planung? Architektur, Politik und Mensch*, Martin Schmitz Verlag, 2004; Burckhardt, Lucius, ed. by Silvan Blumenthal und Martin Schmitz, *Design ist unsichtbar: Entwurf, Gesellschaft & Pädagogik*, Martin Schmitz Verlag, 2012; Ruben Pater, *The Politics of Design: A (Not so) Global Manual for Visual Communication*, BIS Publishers, 2016.

20 See: Anthony Dunne and Fiona Raby, *Speculative Everything: Design, Fiction, and Social Dreaming*, MIT Press, 2014.

design has moved away from following and executing 'briefs' to become a critical field of practice in its own right, employing creative modes of thinking with and through materiality.

With a paradigmatic design practice as discussed above, the boundaries in design become more permeable. Increasingly, inter-, trans-, and cultural perspectives are required, which the design discipline must negotiate and integrate within its repertoire. The social impact that such situated design can achieve is correspondingly high. It is imperative to find answers to pressing social problems; not only to the questions of 'how'—creativity, empathy, collaboration, and others—but also to the essential questions of 'why': fake news, filter bubbles, artificial intelligence, and so on. If design increasingly claims a priority role in an agile, fragile, and rapidly changing world (where we are all designers, where design permeates all spheres of life, and where the world is the object and result of design, among others[21]), it is all the more urgent to explore empirical concepts, systems, and knowledge.

In a digital economy,[22] design has also evolved and a rethinking is taking place. The design discipline and profession have become more independent from the market, capital, and state and contribute to the commons (commons/commoning in design such as social design, ecosystems, etc.) and to a more just, peaceful and

21 See for example: Andreas Reckwitz, *Die Erfindung der Kreativität: Zum Prozess gesellschaftlicher Ästhetisierung*, Suhrkamp, 2014.

22 See: Kevin Kelly, *New Rules for the New Economy: 10 Radical Strategies for a Connected World*, Penguin, 1999; Kevin Kelly, *The Inevitable: Understanding the 12 Technological Forces That Will Shape Our Future*, Penguin, 2017.

non-violent world. Two aspects in particular are important for this development in design: firstly, the change in values and the change in the concept of design, and secondly, open design and the open design movement.

Changing Values, Changing Concept of Design, 'Open' Concept of Design

In addition to an economic motivation of sharing, a change in values characterized by conviviality is emerging in the Creative Class,[23] Creative Societies, or Creative Industries.[24] This includes sharing in the sense of commonality, free co-operation, and ecological sustainability. Under an open concept of design, two currents in particular have emerged: on the one hand, the opening of the design profession to non-designers and the individualized production of design products (e.g. do it yourself, whereby the focus is on production and, unlike in open design, does not include distribution). On the other hand, the creation of digital infrastructures for the design processes and the sharing of knowledge, tools, open products, and manufacturing processes for professional designers. Within this second current, we find innovation and change of design processes, transforming patterns of collaboration and working environments (FabLabs, maker spaces, repair cafés…) of professional designers.

Furthermore, within this second current, we find that design is evolving from a majority-producing service (craft) to the knowledge and service sphere

23 See: Richard L. Florida, ***Cities and the Creative Class***, Routledge, 2005; and Richard L. Florida, ***The Rise of the Creative Class***, Routledge, 2002.

24 See: Reckwitz, ***Die Erfindung***.

of highly specialized knowledge workers.[25] This transformation, which has been taking place since the mid-twentieth century, has produced aesthetic capitalism with new forms of employment and ways of working.[26] At the same time, large parts of the design and creation processes and their forms of production and distribution are significantly supported by intelligent and networked systems (Internet of Things, software agents, cloud computing). Design and production processes are becoming an integrative component between designer, consumer, and producer; previously sharply separated roles and areas of activity are becoming permeable. For example, artifacts can be not only designed but also produced and distributed or consumed. This leads to a dissolution of the classic dichotomy of 'producer' and 'consumer' (understood as 'prosumer'[27]) and a countermovement to capitalism. As described above, this has ultimately lead authors (such as Göpel, Mason, Rifkin) to criticize (abolish) capitalism, since in a digitally networked world the ownership of things becomes increasingly unimportant.

25 Robert Lane, 'The Decline of Politics and Ideology in a Knowledgeable Society', *American Sociological Review*, 31, 1966, 649–662. See also among others: Jeremy Rifkin, *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era*, Putnam, 1995; Richard Sennett, *Together: The Rituals, Pleasures and Politics of Cooperation*, Yale University Press, 2013.

26 See also among others: Gernot Böhme, *Ästhetischer Kapitalismus*, Suhrkamp, 2016; Felix Stalder, *Kultur der Digitalität*, Suhrkamp Verlag, 2016; Reckwitz, *Die Erfindung*.

27 On the term prosumer see Don Tapscott and Anthony D. Williams, *Wikinomics: How Mass Collaboration Changes Everything*, Penguin Group, 2007, 124–150.

This raises the question of how to make an income as a designer. In response to such questions, new business models are emerging, such as the Open Design REMODEL at the Danish Design Center.[28]

Open Design and the Open-Design Movement

Open design aims to share knowledge and realize projects collaboratively. Focusing on participation and collaborative engagement, it offers an alternative to market-driven innovation and production; it counters the free market by putting skills and time to work on a project for the greater good. The term 'open design' comes from the open-source movement from which free software emerged. A well-known example is the free operating system GNU Linux, developed in the 1980s by Richard Stallmann together with a thousand of other programmers. The open-source movement gave rise to the politics of openness[29] and the open-design movement,[30] which call for free access in the sense of open production, open distribution, and open consumption. Well-known design projects are the open furniture designs of Ronen Kadhusin, which emerged from his Master's thesis and his Open Design Manifesto (2010), or the modular house of Ettore Sottsass.

Open design entails following certain criteria, considered fundamental to the design process. These include: customization, distributed design, open structures or downloadable design, and open technologies

28 See 'Remodel', www.remodel.dk/, accessed 2 June 2023.

29 On the term openness see Nathaniel Tkacz, *Wikipedia and the Politics of Openness*, University of Chicago Press, 2015.

30 van Abel et al., *Open Design Now*; Cruickshank, *Open Design*.

(designers become interfaces between production, technology, market needs, and business issues). Furthermore, with the Internet as an infrastructure and communication medium, it has become possible not only to put designs on online platforms but also to share knowledge and experience globally (e.g. on platforms like opendesk.cc, open things-wiki, or 'repair it'). As a result, facilities such as maker spaces, FabLabs, and coworking spaces are experiencing a boom, as they foster innovation through the sharing of knowledge.

The crucial aspect of openness is a paradigm shift towards the use of Creative Commons licenses and the avoidance of restrictions through patents or closed systems. Openness means encouraging universal access, participation, and collaborative production. Or, in short, producing open content and sharing open content. Two types of openness are distinguished: physical products, machines, and systems through the use of publicly shared design information and the documentation of design process in manuals and documents. Open-source principles are consistently integrated into the organization: they develop and use open-design software, publish parts of their work under free licenses, or install collaboration and communication with customers via a versioning system from the field of open-source software development. This increases the complexity of design processes and diversifies the self-image of design. Design practices unfold in new collaboration models, design tools, and spatial environments and take place in collaborative, distributed, and media-infused settings. Computer-aided open design, manufacturing processes, and distribution channels not only result in commons-based peer production

in design, but also can exert influence to design and produce in a sustainable and ethically responsible way (cradle-to-cradle, circular design, supply chains, etc.).

The step made by the EU to enshrine the right to repair in its ecodesign directive in 2021 is emblematic of a shift in thinking within the design world towards repair friendliness as a design ideal.[31] This means that new devices must meet the requirements for reparability according to this directive, which is often not the case. Often, the bonding of the devices (for example, when housing cannot be opened) is problematic or makes repair impossible; here, design solutions and perspectives for debonding techniques and material research are required.

This move recognizes the importance of alternatives to market-driven innovation and production. Repair-friendly design and business models require modularity, open standards, and 3D printing as a technology of recovery. For designers that produce things without markets and corporations, peer production and sharing economies are particularly important. For designers, this raises the question of their role and influence; more broadly, it raises the question of how design commons change attitudes towards property, work, and technology.

31 See: Serena Cangiano and Zoe Romano, 'Ease of Repair as a Design Ideal: A Reflection on How Open Source Models can Support Longer Lasting Ownership Of, and Care for, Technology', *ephemera*, 19:2, 2019, 441–449.

Coexistence Between Humans and Nature in Design

Another dynamic we see in alternative thinking in reaction to the modern, capitalist world has to do with seeking greater harmony with nature, animals, and minorities and includes alternative approaches and models for more sustainable development such as de-growth theories,[32] sufficiency (renunciation), repairing, and sharing. These trends and efforts are also visible in the field of design, where designers are taking more responsibility, whether it is through circular design, questioning supply chains, or adhering to certified and fair production conditions.

The Colombian design anthropologist Arturo Escobar calls this approach to design 'autonomous design': one that questions commercial intentions and foregrounds collaborative approaches–in the sense of commons-based peer productions. Escobar contrasts neoliberal globalization and its associated politics of growth (one-world concept) with the alternative concept of the pluriverse. With pluriverse, he describes a world in which many worlds fit starting from a relational (not dualistic) as well as pluriversal conception of life. Escobar cites, for example, the Muntu and Ubuntun in parts of Africa, the Pachamama among Indigenous peoples of South America, Buddhist philosophy of mind as pluriversal non-dualistic worlds, or cosmovisions.[33]

32 Ernst Friedrich Schumacher, ***Small Is Beautiful: A Study of Economics As If People Mattered***, Random House, 1973.

33 Arturo Escobar, 'Commons in the Pluriversum', in Helfrich and Bollier (eds.), ***Patterns of Commoning***, www.patternsofcommoning.org/commons-in-the-pluriverse/, accessed 7 June 2023.

With *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*, Escobar offers several concepts and methods to overcome the concept of 'Euromodernity' as a 'white-western men syndrome'[34]. Or as Herman Greene puts it:

> The ecological civilization also recognizes the right to justice and fairness for all humans and all living beings; is grounded in places and bioregions, as well as in historic cultures and civilizations; protects the commons; and has the overall goal of bringing about the integral functioning and flourishing of the Earth community as a whole.[35]

With a focus on collaborative, sustainable concepts, Indigenous thoughts are increasingly being integrated into design concepts and Indigenous wisdom and technology that are symbiotic with nature are being used as models for design projects.

American designer Julia Watson's *Lo-TEK. Design by Radical Indigenism* showcases impressive concepts and approaches around the world that stand for sustainable, adaptable, and resilient technologies.[36] The concept of Lo (from low)-TEK(as in traditional ecological knowledge) movement explores the intersection of design and radical Indigenism intending to create sustainable and climate-resistant infrastructures by using traditional and no-mechanical technologies. The assembled examples present diverse ecosystems such as mountains, forests, deserts, and wetlands of Indigenous

34 Arturo Escobar, ***Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds***. Duke University Press, 2018, 221.
35 Herman Greene quoted in Escobar, 'Commons in the Pluriversum', 144.
36 Julia Watson, ***Lo-TEK: Design by Radical Indigenism***, Taschen, 2020.

communities; these are unique to the design discipline and bring to light, for example, the self-organized irrigation systems of rice terraces by farmers in Naples (where irrigation systems with the help of the World Bank fail) or the six-thousand-year-old floating island technology of the Ma'dan in the southern Wetlands of Iraq.

Environmentalist Vandana Shiva (who received the Right Livelihood Award, an alternative Nobel Prize, in 1993) has dedicated her life to fighting against a mechanical-industrial path towards a human-, animal-, and plant-centred paradigm. Her advocacy has focused on food sovereignty—the right of a people to define their own agricultural and food policies—and fights to respect the limits of nature (taking into account plant diversity and soil fertility) and against monocultures, artificial fertilizers, and patented seeds promoting an open-source seed initiative. Partial successes of her activism for novel agricultural models and solidarity-based farming can be seen, for example, in her home country, the state of Sikkim in north-eastern India. An unprecedented law was approved in 2016 that prohibits pesticides, artificial fertilizers, and genetic engineering. Farmers must use natural pesticides and insecticides and only organic farming is allowed.[37]

Another example of design's emphasis on the coexistence of humankind and nature is found in Farm Hack—a global community interested in developing and sharing open source tools for resilient agriculture. Farm

37 **See: Vandana Shiva, *Who Really Feeds the World?*, North Atlantic Books, 2016; see also Vandana Shiva and Maria Mies, *Ecofeminism*, Bloomsbury Publishing, 2005.**

Hack argues that if agrotechnology were organized as a commons, it would be easier to adapt food production to local conditions. Farm Hack serves a rapidly growing open-source knowledge repository for agriculturally relevant ideas, technologies, tools, and methods along with open blueprints and descriptions.[38]

In the sense of the non-linearity theory mentioned in the opening quote, and in order to preserve the commons in the future, it is important to work in a resource-conserving way in design—for example through additive processes, reparability, upcycling, recycling, or downcycling—in order to extend or maintain the service life and longevity of products. Common goods are threatened or already destroyed worldwide by modern life and technology. Many pressing social issues and problems related to globalization and climate change (such as those linked to migration, geopolitics, Big Data, and artificial intelligence) increasingly require a design-oriented perspective.

Towards a Commons-Based Future

Our assumption in this book is that the influence of commons-based peer production in design has reached a societal dimension through ongoing creative-technological structural change. Ideally, groundbreaking insights, tools, and scenarios for design research can be derived from the theories, methods, and case studies presented here. We hope that this will not only

38 See: 'Farm Hack Design Principles', www.farmhack.org/wiki/farm-hack-design-principles, accessed 2 June 2023.

generate connections within a scientific context but also provide important building blocks for practice and teaching in relation to new forms of design, as well as indications for the 'designer of the future'.

Universities and art colleges are elitist and hierarchical entities in which power, performance, and pressure to succeed are central features of a successful career (a counter-example is the Universidad de la Tierra en Oaxaca, Mexico, which rejects formal roles and hierarchies). This research project, related conference, and publication also took place within a university setting, hosted by academics. Inclusion and exclusion criteria were established and rigorous selection procedures were implemented to ensure the quality of contributions. As such, the content found here is based on a strictly academic approach.

However, in the spirit of transition design and autonomous design according to Escobar's ontological design concept, we invited as many people as possible to access and extend our research. We tried to achieve this primarily through three approaches. First, we launched an open call for the conference, with which we deliberately addressed various groups and welcomed submissions from anybody related to the field of design and/or the commons: from designers to academics, practitioners, theorists, critics, teachers, and students, as long as their outline strongly challenged our themes. Secondly, thanks to financial support, we also invited PhD students, students, and freelancers to share their research at the conference. Finally, and thanks to the generous support of the Swiss National Science Foundation (SNSF), we were able to offer participation in the conference free of charge and to make it accessible

worldwide as a hybrid event. The book presented here is the result of this comprehensive and diverse access.

Now, more than ever, it is important to think about the principles of commoning and their capacity to contribute to a more sustainable, just, and peaceful world. In this spirit, we invite you to join us on a journey towards a commons-based future.

Overview of the Chapters

The book is divided into three parts:

Part 1: Design, Identities, and Working Environment

— Nan O'Sullivan uses the example of the School of Design Innovation, Te Herenga Waka–Victoria University (Aotearoa, New Zealand) to demonstrate how the principles of equity, collaboration, and empowerment are central to promoting inclusion and equality.
— Rachel Armstrong seeks to establish a new, technologically mediated and symbiotic relationship with microbes for a life-promoting, circular resource economy that starts in our homes through de-anthropocentrized microbial commons.
— Taking an auto-ethnographic approach and reflecting on her origins, Katherin Gutiérrez Herrera opens a dialogue on the broader structure of what commonality can mean and why it often fails in Western modernist/capitalist social and urban structures.

— With a focus on the commons and Indigenous versus federal notions of land ownership and stewardship, Elpitha Tsoutsounakis elaborates on how design can practically be applied in relation to common lands and practices of commoning.
— Victoria Paeva looks at existing co-workshop spaces in Switzerland, envisioning sharing as an urgent modus in times of economic, social, and environmental crisis, with emphasis on the co-working environment as an alternative model of practicing design.
— To thoughtfully engage our tricky and wickedly challenging times, Errantry Media Lab (max stearns & nathalie attallah) propose a principled approach to design(ing) and redesign(ing) our entangled webs of social constructs, imaginaries, and design decisions.

Part 2: Design, Body, and Ecology

— Torange Khonsari formulates a critical examination of the creation of value: when cultural common goods became part of a network of actants that are pooled to give collective agency to a community of practice, they become the building blocks of a cultural commons.
— Sharon Prendeville and Cindy Kohtala reveal the tension between the culture of commons, embedded optimism, and disruptive reality, drawing on the world of academia that keeps on being organized on hierarchical terms.
— Daniela Salgado Cofré and Álvaro Mercado Jara look at productive commons vis-à-vis new

materialism and use the metaphoric and practical action of collecting clay as a way of exploring sustainable commoning practices in design.

— Jennifer Whitty raises questions concerning the conception of fashion beyond consumerism and identity. She proposes 'being in common' with our clothes, exploring every-day items and their relationally—including that of their relation with land and place.

— Eva Verhoeven 'redesigns' what design means in a neoliberal context, focusing on the inter-dependence of all beings more-than-human and on a plurality of voices in the non-human world.

Part 3: Design, Networks, and Digital Making

— Zoe Romano tackles the growing movement of people who use digital technologies and fabrication tools to open data, hardware, and software to respond to societal challenges in new ways.

— Drawing on examples from Spain, Luis Guerra proposes a reparatory design perspective that focuses on the networks and relationships built between communities, design practices, and everyday lives.

— Situated at the intersection of art and design practices and radical technology, Juan Gomez and Gregoire Rousseau from the Station of Commons question how a collaborative process embedded in technology can find form in new knowledge and know-hows within, against, and beyond capitalist modes of production.

— Cyrus Khalatbari and Rilla Khaled points out how APIs may be used to detour, subvert, and critically question through design the opacity, surveillance, seamlessness, and centralization practices social media platforms employ.
— Yuhe Ge examines how fossil fuel infrastructures can be useful in a post-fossil fuel economy through ecological data in a speculative scenario reconstruction.

I.

Design, Identities, and Working Environment

Our Everyday: The Intangible yet Tangible Tensions between Commonality, Contrast, and Co-operation within Design Education

Nan O'Sullivan

Nan O'Sullivan
is the Head of the School of Design Innovation, Victoria University of Wellington–Te Herenga Waka (New Zealand). O'Sullivan questions, debates, and demonstrates through process and practice the roles and responsibilities of both design and designers in society, particularly in Aotearoa New Zealand. A specific emphasis of O'Sullivan's work is the incorporation of Indigenous, place-based knowledge as a critical component within the discipline of design as well as the pedagogy delivered. Taking an inclusive approach, O'Sullivan endeavours to embrace diversity and introduces students and the discipline to the multiplicities and intricacies of the design world, its vocabulary, and its possibilities.

The principles of equality, co-operation, and self-determination—which are fundamental to commoning—are central to the cultivation of inclusion and equity within Te Kura Hoahoa, The School of Design Innovation (Victoria University of Wellington, Te Herenga Waka) in Aotearoa, New Zealand. Importantly, and specific to our School, we are guided by *Te Tiriti o Waitangi* [The Treaty of Waitangi] in which our responsibilities to Māori (as New Zealand's Indigenous people, principal partners in that Treaty) include acknowledging the Treaty partners as distinctive and equal, not to be blended through co-operation into common-ness. Embracing this *mahi* [mission], this chapter provides an abridged version of design history, highlighting the duplicity and short-sightedness of our discipline's intersections with indigeneity and Euro/American centricity. It explains how *Te Ao Māori* [the Māori worldview], *mātauranga Māori* [Māori knowledge], and *tikanga* [Māori values and protocols] can guide design pedagogy, reflects on the shifts in methods and mindsets, and suggests how these can facilitate inclusion, equity, and self-determination for 'one's' individual and 'one's' collective future and towards positive change. Particularly, within our attempts to shift design from the outmoded Euro-Anglo-American paradigms and hierarchies still modelled as central to the discipline, to a discipline that embraces more than co-operation and equity but also accepts the intangible yet tangible tensions of commonality and contrast. Our proposal is that the guiding principles of equality, co-operation, and self-determination highlighted within commoning (and The School of Design Innovation) are better articulated when rooted in tikanga values of: *akoranga* [the fluidity and longevity of reciprocity], *whanaungatanga* [authentic connections through collaboration], *manaakitanga* [the care offered], and *kaitiakitanga* [active guardianship through the recognition of responsibilities 'to' people and place]. These understandings, we assert, are key for design pedagogy or praxis to shift away from the central creed of universality (historically used to join us all as one). This paper focuses on Te Ao Māori and its supporting Pasifika ideology—*Ta-Vā.* Both speak to the acknowledgement and negotiation of relationships through connectivity of people, place, space, and time. We argue that the values upheld in design and within commoning—of power sharing, equality, co-operation, and self-determination—are best enabled when they are deeply rooted

in shared values, tikanga Māori. We hope to illustrate akoranga, whanaungatanga, manaakitanga, kaitiakitanga as facilitators of *rangatiratanga* [self-determination], in our use of them as our guides.

Bound Together, yet Separated by Common waters

The Pacific Ocean covers one third of the Earth's surface. Our island nations are home to somewhere between one quarter and one third of all the world's languages and cultures. Although the number of people in our regions is relatively small, they are enormously diverse. Bound together yet separated by common waters, the people of Oceania have, for over a thousand years, navigated and voyaged the Pacific Ocean seeking new trade, lands, knowledge, and social exchange. As a result, we view the Pacific region, Oceania, or Moana, as both islands and ocean connected forever through people and place and as part of a reciprocal relationship. These material yet immaterial conditions and tangible yet intangible connections are where this chapter recognizes new opportunities for the discipline of design to find equitable, inclusive, sustainable, and sustaining solutions and for the universal model to recalibrate and reconsider how it might acknowledge and accommodate new, more plural, and more durable methods and mindsets. Transition Design also validates this knowledge by employing cultural acumen and heritage as 'knowledge and wisdom from the past to conceive solutions in the present with future generations in mind'.[1]

Building on Transition Design's borrowed references to Highmore's *The Everyday Life* as an approach to enabling solutions though place-based understandings, Professor Terry Irwin and colleagues acknowledge that they and design 'have much to learn from these approaches to designing and their symbiotic relationship with the natural environment'.[2]

Our aim is to highlight the uniqueness of 'Our Everyday' as a 'sea of islands'[3] that are both seen as individual yet connected as demonstrated through shared stories and languages. This shift in

1 Terry Irwin and Gideon Krissoff, 'Transition Design Monograph', 2015, 1.
2 Terry Irwin, Cameron Tonkinwise, and Peter Scupelli, 'Transition Design Provocation', *Design Philosophy Papers*, 13:1, 2017, 3–11.
3 Epeli Hau'ofa, 'Our Sea of Islands', *The Contemporary Pacific*, 6:1, 1994, 169.

preposition from 'the' Everyday, to 'our' Everyday recalibrates each of our roles and responsibilities and indicates how the sharing of tangible and intangible territories of space, place, and resources might be better understood, respected, and negotiated.

The metaphor of islands and oceans also helps us appreciate the symbiotic relationships that are intrinsic to design; these can be visualized as being tethered within and by common waters made of shared principles and values. The water plays host to many islands where diverse identities exist as distinctive while also acknowledging their interconnected-ness, common-ness to each other. Within design these waters flow between the tangible and intangible, the qualitative and quantitative, the physical and the emotive, meta-physical and physical, the distinct and the universal, and bring to light the opportunities borne of unity in diversity. Both Te Ao Māori and the Tongan ideology of Ta-Vā are based on an understanding of connection and relationships, like those of sea and land, which embody reciprocity and interconnectedness between humans and nature that we claim has been eroded in part by Western-ness and modernism.

This chapter asserts that both Te Ao Māori and Ta-Vā offer potent re-learning opportunities for the discipline of design. In this vein, we seek to demonstrate the deep relevance they have for 'our Everyday' so as to make them also relevant to your (reader) Everyday. As such, we highlight a place-based pedagogy that is carried by the Pacific's common waters—rich with shared values and with ways of being that better enable equitable opportunities for everyone, everything, and everywhere to thrive.

Hoki Whakamuri Kia Anga Whakamua
[Let us Walk Backwards into the Future]

This work is guided by a precolonial *whakataukī* [saying] very familiar to those of us in Aotearoa: '*Hoki whakamuri kia anga whakamua*' [let us walk backwards into the future]. In that spirit, we look backwards to broadly clarify what the Treaty of Waitangi is and then explain the current context of New Zealand's shifting and growing engagement with it.

'With and as *tangata whenua* [the original inhabitants of the Land] and *tangata Tiriti* [non-Māori people of the Treaty], we value Te Tiriti o Waitangi.' For those of us in New Zealand, this conversation needs to begin with the acknowledgement of our Indigenous people whose *whakapapa* [origins] cements them as the *kaitiaki* [guardians] and with the recognition of the shared responsibilities outlined in Te Tiriti o Waitangi, New Zealand's founding document. Briefly, the Treaty is a broad statement of principles on which the 'British and Māori made a political agreement to found a nation state'[4] and recognize Māori and *Pākehā* [European New Zealanders] as equal citizens within that state. Signed on 6 February 1840 by the Crown and 500 Māori chiefs, Te Tiriti o Waitangi was proposed as an equal and co-operative partnership that recognized self-determination for Māori. Although different interpretations of the Treaty continue to be the subject of debate and negotiation, the spirit or principles are now more commonly appreciated and used to define intention. In 1975, over a century after the Treaty's signing and to acknowledge these principles as the guiding tenets of the partnership, the Treaty of Waitangi Act was passed by the government. Both long-standing and current grievances are addressed and resolved through the Act by the Treaty Tribunal. The two entities represented in the Treaty (Māori and Pākehā) are now more commonly understood and described through *te reo* [Māori language] as tangata whenua and tangata Tiriti. Tangata Tiriti is as much an aspirational term as it is a political one and importantly calls for non-Māori individuals, institutions, and organizations to build a relationship with Māori, to 'understand the history of how this nation was formed and to commit to the ongoing fight for Māori self-determination'.[5] Since the establishment of the Treaty, and in no small way in response to the resilience of Māori, efforts to enable improved understanding and for the Crown to better honour the Treaty principles have endured and successfully expanded in recent years.[6] Spurring efforts to

4 Caroline McCaw and Megan Brassell-Jones, 'Do Something New Zealand', in Fredrico Freschi, Jane Venis, and Farieda Nazier (eds.), *The Politics of Design: Privilege and Prejudice in Aotearoa New Zealand, Australia, and South Africa*, Otago Polytechnic Press, 2021, 260.

5 Te Kuru o te Marama Dewes, 'What Does it Mean to be Tangata Tiriti', *The Spinoff*, accessed 6 June 2022, www.thespinoff.co.nz/atea/06-02-2022/what-does-it-mean-to-be-tangata-tiriti.

6 Claudia Orange, 'Story, Creating Te Tiriti o Waitangi', *Te Ara*, accessed 10 September 2022, www.teara.govt.nz/en/treaty-of-waitangi.

honour the Treaty within scholarship, the Education Act of 1989 set the expectations out clearly when it moved to require education providers to acknowledge the broader principles of the Treaty. For Victoria University of Wellington, Te Herenga Waka, this is disseminated through te reo, mātauranga Māori, and tikanga Māori. In 2014, the university stated that:

> Our respect for Te Tiriti o Waitangi and mātauranga Māori motivates us to influence and inform societal change for the betterment of Aotearoa New Zealand. To achieve this, we embed te reo, tikanga, and mātauranga Māori in our university's activities, including research, learning, and teaching.[7]

The values the University refers to are akoranga, whanaungatanga, *whai mātauranga* [curiosity], kaitiakitanga, manaakitanga, and rangatiratanga. The School of Design Innovation highlights within our mission statement: whanaungatanga, kaitiakitanga, and manaakitanga as the core values that guide the shifts we seek and that, if undertaken authentically, enable akoranga and rangatiratanga.

Central to our approach to curriculum design is the ongoing development of strategies that firstly recognize the Treaty, and in doing so, the inclusion and integration of Te Ao Māori, mātauranga Māori, tikanga Māori, and te reo into our everyday experiences of design within the curriculum we deliver.

Foundational to the success of the School's recently recalibrated mission statement[8] is the recognition that

> Indigenous knowledge is not old knowledge or knowledge relevant to distant, now outmoded times. Quite distinctly from Western knowledge, Indigenous knowledge has continued to evolve

7 Nan O'Sullivan, 'Do the Mahi Reap the Rewards', in Claudia Mareis and Nina Paim (eds.), ***Design Struggles: Intersecting Histories, Pedagogies and Perspectives***, Valiz Publishing, 2021, 247.

8 Thanks to the efforts of the Deputy Head of School (David Hakaraia of Ngāpuhi and Ngāti Pāoa), and acknowledging the efforts in New Zealand and around the world to shift design's narrative, the School's Mission Statement has recently been recalibrated to emphasize the values of whanaungatanga, kaitiakitanga, and manaakitanga. See: www.wgtn.ac.nz/design-innovation/about.

through rebellious, resistant, and resilient practices of its own.[9]

This chapter acknowledges that Indigenous world views hold many keys to many ways of being that design has, to date, ignored, disrespected, or demoted to, and viewed as irrelevant—while remaining compliant to the tenets of universality within a dominant and dominating Western paradigm.

Biculturalism: Our Journey to Establish Unity in Diversity

Since this chapter examines the relationship and opportunities as being between Māori and Pākehā or more widely as between tangata whenua and tangata Tiriti, it may be difficult to see how our specific approach and aspirations can directly relate to a global context or to your (reader) specific context. To respond to this, we emphasize the space that Te Ao Māori, mātauranga Māori, and tikanga Māori hold in the past, present, and future of global design, while also throwing light on the relevance and capacity of Indigenous knowledge to contribute to the more optimistic outcomes we all seek. We advocate that by reflecting on and sharing how we have begun our journey to embrace the wisdom and knowledge held in Te Ao Māori, mātauranga Māori, tikanga Māori, and Māori language (te reo) and to recognize the opportunities and connections that this approach offers us, it becomes more apparent to others how they can better assist in the mobilization of other Indigenous knowledges. In doing so, we assert that others can contribute to the development of more positive and authentically derived futures for their peoples and in their places.

Sustainability is a good frame to understand the shared relevance of Indigenous knowledge to global or wicked problems—but it is not the only one. For Māori, the guiding value for sustainability is kaitiakitanga. This exemplifies stewardship, guidance, and care towards nature and our fellow humans and non-humans. Importantly, kaitiakitanga shuns notions of ownership or paramount rights over peoples or places. Within more recent Western manifestos promoting

9 Nan O'Sullivan, 'Walking Backwards into the Future: Indigenous Wisdom within Design Education', *Educational Philosophy and Theory*, 51:4, 2019, 427.

sustainable practice or lifestyles, we find the notion that humans need to take both individual and collective responsibility for their actions. Despite these manifestos being described by their authors as newfound and critically timed, proclamations like this are viewed with some scepticism and by none more than Indigenous peoples. Their cultures already hold within both the historic and contemporary versions of their cultural traditions, beliefs, and practices, better and more authentically devised strategies of sustainability that consider inter-generational health, wealth, and wellbeing. Indigenous belief systems incorporate past and present knowledge and ways to manage the balances and imbalances between humans, each other, and the natural environment. Despite their insights and experience, this knowledge (and those who espouse it and demonstrate it) remain side-lined. As Renata Leitao asserts,

> there are numerous cultures in the world whose knowledge could be mobilized in order to remake the relationship between humans and nature and Western conceptions of productivity, consumption, and evolution.[10]

B.S. Santos points to a central roadblock when he explains that this knowledge is

> largely wasted because the theories and concepts developed in the global North and employed by academia (and the commercial world) do not identify such alternatives. When they do, they do not value them as being valid contributions towards constructing a better society.[11]

The goal of our research and mahi is to change the lack of recognition and the weight that these alternative conceptions of the relationship between humans and nature are given and hold.

10 Renata Leitao, 'Recognising and Overcoming the Myths of Modernity', in Sharon Prendeville, Keelin Leahy, Abigail Durrant, and Nora O'Murchú (eds.), *Design as a Catalyst for Change*, Book of DRS2018 Conversations, University of Limerick, 25–28 June, 2018, 7.

11 Boaventura de Sousa Santos, *Epistemologies from the South*, Almedina, 2016, 20.

One Storyline Conceived and Exported

Our study supports Arturo Escobar's concern that there is only 'one storyline conceived from the perspective of the Euro-American experience and exported to many world regions over the past few hundred years';[12] such singularity has little place in twenty-first century's design methods and mindsets. This paper points to the challenges currently being faced globally and that continue to be impeded by a belief in the universal narrative.

A brief overview of Te Ao Māori highlights connectivity of people to place and is paralleled by Ta-Vā, a Tongan ideology that describes the reciprocal and eternal relationships between people, nature, and things. Te Ao Māori is an understanding that the natural world is inter-connected and related to the people of the land and that all animate and inanimate elements are infused with *mauri* [life's essence]. The defining principle is whanaungatanga, kinship, where all the elements within the living and spiritual realms are interrelated. Mātauranga embraces all that is distinctive about Māori culture and identity and encompasses not only what is known, but how it is known—the way of perceiving and understanding the world and the values and systems of thought that underpin these perceptions. Tikanga are the values and protocols that facilitate this. There are many tikanga, but central to the School of Design Innovation is akoranga, which we demonstrate as a reciprocity of the relationship between teaching and learning as well as an appreciation for the equity, inclusion, and co-operation needed to support this non-hierarchal relationship. Manaakitanga encapsulates the root word *mana* [respect], which refers to reputation and influence. Manaakitanga also encapsulates hospitality, kindness, generosity, and support, in which the process of showing respect, selflessness, and care of others and place is demonstrated. Whanaungatanga reflects relationships built on authentic and meaningful connection and reciprocal respect. Kaitiakitanga speaks to guardianship and stewardship, which in education is key. In our current efforts to create more sustainable and sustaining approaches within all our lifestyles, environments, and economies, kaitiakitanga is a vital concept in recognizing our individual and collective responsibilities to

12 Arturo Escobar, 'Transiciones: a Space for Research and Design for Transitions to the Pluriverse', *Design Philosophy Papers*, 13:1, 2015, 14.

our eco-systems and their inhabitants, be they human or non-human. The ability to empower rangatiratanga proves for many non-Māori to be the most challenging value to understand, emulate, or relinquish to others. It recognizes the right to self-determination. While we all seek this human right for ourselves, this is not always true for our considerations towards others. Design's processes, systems, strategies, and tools often fall short in affording, enabling, or empowering self-determination for others.

The Tongan ideology Ta-Vā [*Tā* being time, and *Vā* being space] offers understandings of eternal and symbiotic interconnectivity between those who inhabit earth and what they add to or take from that relationship. As a protagonist of this broader appreciation of relationships between humans and nature, humans and things, and humans and humans, Tongan academic Hūfanga 'Okusitino Māhina articulates that 'all things, in nature, mind and society, stand in eternal relations of exchange'.[13] Māhina also explains that, as a part of Ta-Vā and the supporting ideal of *teu la Vā* [eternal connections], relationships between nature, things, and people are eternally inter-connected, reciprocal, and co-operative. Perhaps expanding on Commoning's shared belief in the attributes of equality, co-operation, and self-determination, Māhina also proffers that as a part of the relationship that time and space share, they move fluidly, not always smoothly, forwards, and backwards between generations offering and sharing moments of knowledge, reflection, tension, conflict, peace, negotiation, and change.

> People are thought to walk forward into the past and walk backward into the future, both taking place in the present, where the past and future are constantly mediated in the ever-transforming present.[14]

The alignment between Ta-Vā and the prominent Māori whakataukī familiar to many in New Zealand 'Hoki whakamuri kia anga whakamua' is self-evident. Fundamental to this discussion is our recognition that these values and ideologies are not irrelevant or obsolete and that they offer keys to both current and speculative

13 'Okusitino Māhina, 'Tā-Vā and Moana: Temporality, Spatiality, and Indigeneity', *Pacific Studies*, 33:2/3, 2010, 169.
14 Ibid, 170.

approaches to design and to the ways being sought by many in their quest to address sustainable and sustaining lifestyles.

In order to succeed in these quests, the connections shared by people with place, often referred to in Western terms as the in-betweenness, require continuous care, nurturing, and negotiation. The energy and forces held within the Earth and the symbiotic relationships between it and humans are implicitly understood within Māori and the Pasifika cultures. Māori author and anthropologist Amiria Henare explains that 'in the Māori world people and things have close relations that collapse spatial and temporal boundaries'.[15]

By acknowledging the fluidity and transparency of space and time, Henare suggests the in-betweenness that exists between these poles can be understood or characterized as symbiotic relationships of dependence, independence, fluidity, memory, tension, balance, imbalance, symmetry, or asymmetry, and offer design understandings and approaches for crossing into other cultural realms and away from the universal that is still, for most, 'embedded in the underpinning theoretical frameworks of Western-based precepts, ideas, concepts and aims'.[16]

As asserted by Māhina, the understanding of continuous connectivity and circularity is not, for the most part, expressed currently within the Western version of design education that is currently taught. Māhina claims, 'Western science and technology have been largely responsible for the singular, techno-teleological, individualistic, analytical, and linear fashion in which time and space are situated'.[17] Māhina's criticism elucidates a fundamental issue for design as it attempts to embed more circular understandings of design's role and impact not only on environments and ecologies but also on economies. In stark contrast to Ta-Vā is

> the predominant Western manner in which the past, present and future are problematically arranged, with the past in the back, present in the middle and the future in the front, dictated by linearism.[18]

15 Amiria Henare, *Museums, Anthropology and Imperial Exchange*, Cambridge University Press, 2005, 3.
16 Ibid.
17 Māhina, 'Tā-Vā and Moana', 171.
18 Ibid, 5.

Although this chapter does not unwrap all appreciations and translations available of Tā-Vā, the notion that it can be understood as an ongoing conversation between humans and nature, humans and things, and humans and humans, in which a 'telling of the conditions takes place',[19] enables another metaphorical appreciation of the physical, emotive, tangible, and intangible information given and gained from such a perspective.

In its quest to address global issues and wicked problems, the field of Transition Design's 'embracing old ways of being to provide productive pathways towards future',[20] has been of valuable support to our mahi. In concert with David Orr's writings in *Earth and Mind*[21] borrowed by Transition Design, our curriculum also addresses what Orr sees as design education's

> fragmenting of the world and the discipline and delivering education that leaves most students without any broad, integrated sense of the unity of things or an understanding of the consequences this has on themselves, or for the planet at large.[22]

Though seeking the same outcome, the means through which we seek it stands in contrast to Orr's: we seek unity in diversity—not a universal understanding or a simple static harmony.

Our research takes its place in that diaspora and offers insight into the methods and mindsets that Te Ao Māori, mātauranga Māori, and tikanga Māori offer in creating more positive futures through design, for not only Aotearoa's peoples and places, but more expansively across the globe.

Knowledge Offered but not Heeded

Like Escobar and Transition Design, we acknowledge the plurality of peoples and knowledges and recognize them as distinct from the dominant and hegemonic Euro/American-centric narrative. We recognize that acknowledgement is only a first step, albeit a

19 Ibid.
20 Irwin, 'Transition Design Provocation', 3–11.
21 David W. Orr, *Earth in Mind: on Education, Environment, and the Human Prospect*, Island Press, 2004.
22 Orr, *Earth in Mind*.

key one, to establishing understanding and to incorporating new approaches to design. This chapter also criticizes the discipline's historic recordings and apparent blind spots demonstrated and chronicled as a part of its historic intersections with Indigenous knowledge. In these it is claimed that indigeneity threatened to impede the capacity of design, or society to reach even some of its earliest goals of modernity. The Design Transition Monograph borrows David Raizman's 2010 rendition of the history of modern design[23] in which Raizman stated that a unity (ironically discussed by him as a part of design's ongoing universal agenda) would 'serve as a metaphor for an ideal world in which all individuals are unified and live in harmony with society'.[24] This chapter seeks to find traction on care to appreciate what and how that unity is created, and which principles and values might best lie at the heart of it.

In order to offer an insight of how design might find a pathway forward, and in a way that demonstrates unity through diversity not sameness, an historic overview is outlined. The overview identifies some of modernity's recognitions and (sadly) rejections of Indigenous knowledge. It is well established that design's history is told by drawing examples from Europe and more recently the United States. Despite ongoing efforts to shift longstanding paradigms, the dominant narrative remains. One of the first steps forward in any widening or deviating the teleological design lens is a recognition of the placement and contributions Indigenous knowledge offers as part of the discipline's history and a recalibration of the global disseminations of it to better reflect our own islands more accurately, in our own seas, which are, of course, interconnected, and responsive to each other's conditions, health, and wellbeing.

In Aotearoa, New Zealand, the establishment of design as a discipline occurred well after the colonial period and so was positioned as quite distinct from traditional art and craft. As a result, and supported by the tenets of the universal, design regarded Indigenous knowledge as having little to offer the discipline and it continued to be indoctrinated by a working model that privileged these codified tenets. In 2018, I attended a lecture by the well-respected Paola Antonelli, Senior Curator, Director of Research and Development at MoMA and renowned design author. Antonelli clarified that her presentation was a brief and succinct trajectory through design's

23 David Raizman, *The History of Modern Design*, Prentice Hall, 2010.
24 Irwin, 'Transition Design Monograph', 2.

definitive moments across the globe. She delivered a summary of well-trodden historic moments: the Industrial Revolution, the Vienna Secession, Russian Constructivism, the Bauhaus, and of course the grand finale, American Modernism. The personal insights offered numerous interesting and important segues between trends as well as insightful diversions that all lead to Europe and America's current contributions to and impacts on design in the twenty-first century. Although a broader view was not asked of Antonelli's anthology, when questions of cultural influences on design's history were posed, the discussion was limited to references of the early twentieth-century designers' perceived notions that it was a troublesome impact on form for modernism. Any positive cultural references are limited to Japonisme.

Japonisme was coined by French critic Philippe Burty (1830–1890) rather quixotically, a quarter of a century after Owen Jones' (1809–1874) reference to the sophistication of the stylized and abstracted from nature, not copied, aesthetics of both Māori and Pacific craftsmen and women. During his work on the Great Exhibition of 1856, Jones developed a close working relationship with the like-minded Henry Cole (1808–1882). Cole would, as an extension of his collaborations with Jones, go on to become the first director of the South Kensington Museum, now the renowned Victoria and Albert Museum. This relationship enabled Jones to widely present his theories on ornament. Through his own work and lectures, Jones had been formulating what he considered to be key principles for good design. These principles provided numerous reforms that framed the beginnings of design education. In an attempt to encourage acknowledgement of diverse principles and learn from them, Jones published his exemplary and seminal work: *The Grammar of Ornament*.[25] It is in this work that Jones gathered a geographical assortment of what he considered the best historical examples of ornament. The introduction acknowledges the importance of ornament to all cultures, stating, 'There is scarcely a people, in however early a stage of civilization with who the desire for ornament is not a strong instinct'.[26] Jones immediately turned his attentions to the works of Māori and Pacific peoples, and gushed: 'nothing is more primitive and yet the arrangement shows the most

25 Owen Jones, *The Grammar of Ornament*, Van Nostrand Reinhold Company, 1856.
26 Jones, *The Grammar*, 1.

definition and skill'.[27] Jones goes on to celebrate the instinctive eye, the skill, the beauty, and importantly for design, the fitness for purpose expressed in both form and the graphic markings that were carved into, woven around, or applied to both Māori and Pasifika forms, including the human form.

> The beautiful New Zealand paddle would rival works of any civilization. The swelling form of the handle where additional weight is required is most beautifully contrived. True art consists of idealizing, and not copying the forms of nature.[28]

Burty also spoke to the effect of flatness, colour, and stylization in his championing of pure beauty as quintessential components of the newly forming design principles, and perhaps not unsurprisingly negated to consider any connection to the highly skilled aesthetic works of Māori or any traditional Indigenous creative practices. The universal model of design's history is still embedded in the one history told today and written by Sigfried Giedion, Nikolaus Pevsner, Rayner Banham, and David Raizman. Their writings continue to perpetuate, purposefully or just ignorantly, the notion of indigeneity as counter-intuitive, or even degenerate, and as espoused by Adolf Loos (1870–1933), 'no less than a crime'.[29] It was as part of this admonishment that Loos specifically denied the relevance of Indigenous aesthetics to the evolution of modernity. This defamation was one of the earliest and most fanatical outbursts. It initiated the turning point in which the study and the expression of ornament as a reflection of culture, religion, narrative, or as informing form were eliminated from the curricula of art and architecture.

Contrary to the universal history still promoted and disseminated, this study argues that visual culture, criticized in the nineteenth century as excessive and meaningful to only those of little sophistication, was not unequivocally removed from aesthetic education. If not yet celebrated within design's history as having contributed to the pursuit of beauty or the roots of modernist design, Indigenous knowledge certainly demonstrated and continues to demonstrate numerous rationalized and abstracted visual strategies

27 Ibid, 2.
28 Ibid, 3.
29 Adolf Loos, *Ornament and Crime*, Ariadne Press, 1997, 45.

and ideologies that suggests their pre-existence and unacknowledged influence on both the reductive codes of the aesthetic language utilized by the modernist doyens in their development of the universal visual language. It is misconceptions like these that need removal from our perception of Indigenous knowledge and that first motivated the research for this chapter.

Fig. 1: Examples of Tribal Plates (left) depicted in Owen Jones, *The Grammar of Ornament* (1856) and Bauhaüsler Gunta Stölzl's *Weaving*, Bauhaus Weaving Workshop (1928) show parallel uses of codified reduced graphic codes.

Throughout its post-industrial history, design education has taken a calculated—and at times politicized—approach to the relationships it has formed by straddling and dividing itself between numerous affiliations and disciplines. The migratory dexterity of design was first exhibited by numerous Bauhaüsler during the school's short life, spanning between 1919–1936 and bookended between the First and Second World Wars. Of the celebrated faculty, it was founder Masters Johannes Itten (1888–1967), Lázsló Moholy-Nagy (1895–1946), Joseph Albers (1888–1976), Anni Albers (1899–1994), Marcel Breuer (1902–1981), and Herbert Bayer (1900–1985) who

coupled design to art then technology, manufacturing, and social responsibility. In doing so, they expanded the discipline's reputation, knowledge base, functionality, and social conscience exponentially. Unfortunately, albeit all these designers had emigrated from Germany to the United States, numerous elements that they had embedded in Bauhaus' curriculum—the holistic appreciations of learning by doing, the whole human, newly posited environmental sciences, intangible spatial qualities, and social reforms—became redundant. Of this rich syllabus, the American translation favoured only adopting the reductive modernist aesthetic because it was a highly popular and profitable one. The holistic tenets were lost in what was the wholly different economic climate of a mid-twentieth-century capitalist environment.

This was disappointing to many. Perhaps the person most disappointed was Sybil Moholy-Nagy, wife of the late Lázsló Moholy-Nagy. Lázsló had died at the untimely age of fifty-three and Sybil chose to take on the role of maintaining, if not the momentum, the legacy her husband had attempted to forge by way of an alternative pathway within the profit-driven industrialist world he had found himself in. Sybil, a self-proclaimed 'beachcomber of history',[30] firmly and repeatedly chastised American industrialists, designers, and architects for their version of the Bauhaus as being 'a mixture of truth and opinion' and accused the American design community of having 'slew the anti-aesthetic, expedient, economic and socially conscious tendencies of the European Modernists with inadequate and ill-informed arguments'.[31]

Further efforts to build on these concerns followed in the mid-twentieth century, with commentary and criticisms of human behaviour, mass-consumption, and environmental damage by Richard Buckminster Fuller (1895–1983) and then some twenty years later by Victor Papanek (1927–1998), a fierce and polemic advocate for social change. Fuller is considered to be one of the most formative design scientists to shape the design profession. After László and Sybil Moholy-Nagy, but before environmental considerations were acknowledged as global issues, let alone wicked problems, Fuller argued that 'the resources offered by the universe, energy, materials, and space, were finite and that they had to be seen in terms of their

30 Sibyl Moholy-Nagy, 'The Diaspora', *Journal of the Society of Architectural Historians*, 24:1, 1965, 24.
31 Moholy-Nagy, 'The Diaspora', 26.

relationships to each other'.[32] A little-known anecdote reported by American art critic Calvin Tomkins is that in 1965, Fuller visited New Zealand. He was visiting a yet to be identified cultural anthropologist, who in Fuller's words was a Keeper of the Chants of the Māori people.[33] Recognizing the value of these chants to more than just New Zealand's anthropology, but all of humanity, Fuller encouraged his new colleague to record the sacred stanzas. In terms of tempo, these stanzas, are signifiers of Tā, time in terms of mathematics and rhythm.[34] Tomkins reported that while in New Zealand, Fuller launched into extensive monologues, recalling data on tides, prevailing winds, boat design, mathematics, linguistics, archaeology, architecture, and religion. The apparent take away from Tomkins' discussion was that 'Māori had been among the first peoples to discover and understand the principles of celestial navigation'.[35] Tomkins reports that Fuller commended Māori for their ingenuity and for being among the first to 'find a way of sailing around the world, a long, long time before any such voyages were commonly believed to have been made'.[36] Initially published in 1969, just four years after his visit to New Zealand, Fuller's most popular work, *Operating Manual for Spaceship Earth* was published. It is a synthesis of his world view. In it, Fuller investigates the challenges facing humanity. He asks and answers how we can utilize our resources more effectively to realize our potential, calls for a design revolution, and offers advice on how to 'guide Spaceship Earth toward a sustainable future'.[37] Fuller's assertions for sustainable futures included not only the contributions to and adoption of future technologies but offer one of the first discussions regarding the significant impact Indigenous knowledge has made to human advancement beyond the historic timeframes it is usually confined to.

The suggestion that historic inter-generational and place-based technologies can both lead and enhance global knowledge is evidenced when Fuller applauds the Māori navigators for their advanced capabilities. This study suggests that Indigenous understandings of space and time hold an important key to guiding

32 Goldberger, 'Missionaries of Human Possibility', 40.
33 Calvin Tomkins, 'In the Outlaw Area', *The New Yorker*, 8 January 1966.
34 Sullivan, 'Walking Backwards', 427.
35 Tomkins, 'Outlaw Area'.
36 Ibid.
37 Richard Buckminster Fuller, *Utopia or Oblivion: the Prospects for Humanity*, Lars Muller Publishers, 1969, 31.

Spaceship Earth both metaphorically and literally. The idea of Earth as a spaceship, a self-contained living capsule, gained popularity in the 1960s and prompted economist Robert Heilbroner to point out that:

> As in all spaceships, sustained life requires that a meticulous balance be maintained between the capability of the vehicle to support life and the demands made by the inhabitants of the craft.[38]

The mental leap to appreciating that those people inhabiting an island in the middle of the Pacific Ocean may also have been considered in the same way as Fuller, Heilbroner, and their cohorts consider their spaceship scenario is not a difficult one. Fuller, like the inhabitants of these small and remote islands, considered individual connectivity and accountability as paramount to both responsible and sustainable practices. In response to Fuller's 1963 work *Operating Manual for Spaceship Earth*, the highly acclaimed philosopher Marshall McLuhan (1911–1980), who had coined the phrase of Global Village, famously declared 'there were no passengers on Spaceship Earth' and asserted that 'we are all crew'.[39] We argue that Fuller's findings, McLuhan's proclamations, Heilbroner's clarification, and most recently Kate Raworth's summations of a doughnut shaped economy, parallel the Indigenous practices of individual responsibility and connectivity to the Earth and hold discernible synergy to Māhina's assertions that everything plays a role within constant circular rotation of symbiotic 'eternal relations of exchange'.[40]

Fig. 2: Cultural articulations of eternal relationships and symbiotic balance (left to right): yin and yang, Buddhist endless knot, Celtic double spiral, and Māori Takarangi. Source: Kate Raworth, *Doughnut Economics. Seven Ways to Think Like a 21st-Century Economist*. Chelsea Green Publishing, 2017.

38 Kate Raworth, *Doughnut Economics. Seven Ways to Think Like a 21st Century Economist*, Chelsea Green Publishing, 2017, 46.

39 Daniel Vallero, *Paradigms Lost. Learning from Environmental Mistakes, Mishaps and Misdeeds*, Butterworth Heinemann, 2005.

40 Māhina, 'Tā-Vā and Moana', 169.

In chapter seven ('Rebel with a Cause') of his book *Design for the Real World*, Victor Papanek discusses cultural blocks.[41] Although oddly titled, Papanek goes on to assert the insightful and intangible qualities of cultural knowledge. Papanek discusses how a complex Inuit designed nine-knot could be solved in minutes by Indigenous children, 'befuddling the average westerner for hours'.[42] Papanek explains that the Indigenous understandings and expression of space are wholly more expansive from those of the West and confirms this belief by highlighting Inuit's capabilities. He discusses that they possess spatial and perceptual abilities unknown within the empirical and linear constructs embedded in Western understandings and perceptions of space.[43] In line with many Indigenous cultures that have visualized a state of eternal and symbiotic balance, Papanek believed that this understanding of connectivity was not just ideological.

Both Fuller and Papanek gained global attention but limited positive reaction or interaction with their concerns for the environment and excessive consumption and the remedies they offered. Their theories were aligned, or at very least cognoscente of Indigenous knowledge and possibly because of this, their own ideas were overlooked in favour of the incumbent Western knowledge systems off-loaded to us all within the accompanying economic strategies and political posturing.

Kotahi Te Kohao o Te Ngira e Kuhuna ai Te Miro Ma,
Te Miro Pango, Te Miro Whero
[There is but one eye of the needle, through which the white,
the black, and the red threads must pass]

To remind ourselves of our own process, let's recall the whakataukī that guides this work, 'Hoki whakamuri kia anga whakamua'. By owing the errors of the discipline's past actions and missed opportunities, some thought is required around our current actions and strategies before we leap into devising next steps towards new futures. As aforementioned, The School of Design Innovation draws on the proverb above to express how by working together in ways

41 Victor Papanek, *Design for the Real World*, Thames and Hudson Ltd, 1985, 136.
42 Ibid.
43 Ibid.

that include contrasting and convergent knowledges, technologies, and praxes, we can trace a common path in the present and achieve a collective vision for design and our futures. Holding Te Ao Māori close, we are committed to upholding tikanga Māori and nurturing students who, as arbiters of design, harness, acknowledge, and build on the past to act in the present in ways that positively impact the future. Encouraging inclusivity, criticality, and creativity as strategic goals, our programme fosters thinking, doing, and being as the three threads by which we attempt to inspire our students. We aim for them not only to be empowered but to be creative, critical, insightful, impactful, and to contribute through the shared values of care, connection, and respect (as articulated through tikanga Māori) to the creative, cultural, digital, social, and ecological wellbeing of Aotearoa and beyond.

Firstly, and central to any use or engagement with mātauranga Māori in our design curriculum, there needs to be careful consideration by both staff and students of how, when, and where this engagement occurs. Recognizing Māori are the kaitiaki of this knowledge and understanding ways and means to articulate respect for this knowledge is the first step. The narratives, worldview, and values we seek to learn from are highly valued by Māori and are considered as *taonga* [treasures] by them. Importantly understanding the implications of cultural appropriation, appreciation, and adaption and knowing one's positionality as juxtaposed to these is a necessary understanding for us all. Understanding the nuances of how and who profits from this knowledge and how to respect it is also essential. In Aotearoa, conversations around data sovereignty, commercial uses of Indigenous iconography in graphic design, and the use of te reo in our communications are often discussed in class, in the news, or in more extreme cases in legal proceedings. In their chapter 'Do Something New Zealand' in *The Politics of Design*, Caroline McCaw and Megan Brassell-Jones critique the use of New Zealand's native landscapes, fauna, and flora and interchanging English words with similar sounding te reo ones. In the case they discuss, the te reo word *hāpi* [beer hops] replaces the English word 'happy', in the graphic design of a craft beer logo. McCaw and Brassell-Jones comment that although this may look innocuous enough, we need to question more deeply the effects of these uses and reproductions.[44] The authors

44 McCaw and Brassell-Jones, 'Do Something', 259–260.

ask us to reflect on whether these are appropriations, appreciations, or adaptions of cultural acumen acceptable and if not, where, when, and how might Pākehā better recognize the boundaries or establish understandings and connections that help make them acceptable.

Māori Should Stand Tall in the Fact That Our Ancestors Led the World in Technology and Innovation; it's in Our DNA[45]

Moving with the shifts in the role of design and designers in society and into the work of social design and social innovation, another design practice needs consideration. Our research has focused on the overly expansive use of formulaic Design Thinking and Participatory Design approaches, which include design tools, methods, and mindsets developed for contemporary but universal contexts. The use of these limited models relies heavily on defining solutions for (and very rarely with) the Indigenous, marginalized, and oppressed communities the models seeks to help. Participatory Design brought with it the realization that designing 'for' customers simply sustained the outmoded model of designers as experts. This left limited space for diversity or lived experience to inform either the process or the solutions and led to limited success. A quick and much needed adjustment led to the model of designing 'with' the customer. A small gain. Where this chapter asserts design struggles in its engagement with communities that it is not a part of—and where it proposes that the most definitive shift in mindset needs to occur—is in the facilitation of self-determination; and using more appropriate prepositions will help. Removing phrases like 'design for' or 'design with' and replacing them with 'design by' enables space for self-determination. In their article 'Design and Empowerment within Indigenous Communities: Engaging with Materiality', Leitao and Marchand define empowerment as 'the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them'.[46] They elucidate the usefulness of design as an active partner with empowerment to enable self-determination stating, 'design and empowerment refer

45 Jacques-Pierre Dumas, 'IT Brief New Zealand', accessed 10 January 2023, www.itbrief.co.nz/.

46 Renata Leitao and Anne Marchand, 'Design and Empowerment within Indigenous Communities: Engaging with Materiality', *Recherches Amérindiennes au Québec*, XLVIII, 1:2, 2018, 2.

to a fundamental ability of humans beings: our ability to change the material conditions in which we live'.[47] The universal mechanism often perceives Indigenous or cultural groups as needing what is often framed by designers to be superior Western design intelligence, demonstrated in its methods, systems, and strategies and imposing these throughout the design process into the solutions executed onto communities. In doing so, this fails to respect others' right to self-determination for themselves and their people or as kaitiaki; those with the responsibilities of stewardship and inter-generational care. For clarity, as non-Indigenous designers (or for us in Aotearoa, as non-Māori designers), we have neither the knowledge nor the right to interpret or to decide what or how a change in conditions should be manifested, let alone impose a change of the conditions on others or for others. This is especially potent when so often the solutions conceived only further a dependence on Euro-American-Western knowledge, as a part of political and social structures that have yet to recognize other worldviews, traditions, or ways of being as valued assets, let alone valuable assets.

He Reo e Rangona, Engari he Kanohi Kitea
[a voice may be heard but a face needs to be seen]

Sharing a legacy of colonization, Indigenous communities across the globe have struggled with the right to self-determination. Before European colonization and assimilation into Western models of social life, Leitao and Marchand argue that 'Indigenous communities lived, in a world of their own making' and that 'design can support the empowerment of Indigenous communities by nurturing their inherent capacity to design'.[48] Referring back to Jones' acknowledgement well over a century and a half ago of the inherent and advanced capacity of Māori to design, our research seeks to demonstrate how mātauranga Māori can and does influence the design curriculum we offer. The example we offer is *Te Whare Tapa Whā* [taking care of all aspects of life to support wellbeing], a holistic model of health and well-being designed by Sir Mason Durie in 1982, and it is a central component of the Design for Social Innovation major we offer.

47 Ibid, 2.
48 Ibid, 3.

One of the specific focuses within our Design for Social Innovation major is the development of participatory and inclusive models that better recognize place-based knowledge and expertise and to acknowledge the complexity of such a relationship. Returning again to our whakatauki, our efforts now circle back to tikanga Māori to inform current practice that will in turn impact our future. In a presentation at the World Design Assembly (2019), I spoke of the obstacles current design practice faces when engaging with social design or social innovation. The example I gave was within the discipline's practices of co-design. I argued that guided by tikanga Māori, it becomes clear that certain approaches within design education, thinking, and practice require redress. The co-design and participatory approaches currently demonstrated within design speak to engagement, inclusion, equality, empathy, and more often than not, produce designed outcomes 'for' clients. I highlighted Whare Tapa Whā as an alternative approach to this. Importantly, this strength-based approach to the facilitation of health and wellbeing was designed by Māori for Māori. Whare Tapa Whā moves away from Western health models, in which services are designed and delivered by outsider experts, it is one of a number of Māori and Pasifika models that evoke whanaungatanga, kaitiakitanga, and rangatiratanga as key canons. Most importantly for design, this model gives agency to those seeking change and ensures that decisions around stakeholder participation, methodology, evidence, intervention, communication, facilitation of outcomes, and the distribution of funding are in the hands of those whose lives, lands, children, and grandchildren are to be impacted by any changes advocated. This aspect of rangatiratanga is perhaps where design as a discipline still has work to do and is where we place the challenge for the students and practitioners alike. The goal of our endeavours is to enable a new generation thinking by designers in which they have a nuanced appreciation and respect for the connectivity and values imbued within Indigenous knowledge and that have the skills and courage to engage with empathy, care, respect, reciprocity, and autonomy as strategies to design by.

I would like to leave you with an ongoing project by an alumni of our school, Māori artist and activist Hohepa Thompson. Thompson is both Māori and Pākehā and his work, like ours, seeks unity through diversity. Throughout 2022 he literally jumped on the

bandwagon to promote the change of moniker for New Zealand. The 'We are Aotearoa, Hori's Pledge'[49] campaign with its accompanying billboard was promoted and driven around the country to throw light on the need to acknowledge our Indigenous past, politicizing our present and seeking change for our future. Thompson, whose company's name is Hori, started a petition to recognize our shifting landscape and a growing desire for rangatiratanga being in part acknowledged by a return to Aotearoa, the original name of our country. His efforts illustrate the transitional period New Zealand is currently experiencing, aiming to ensure that the Māori worldview, knowledge, values, and protocols be considered (if not the mainstream culture of our nation that they are) at least equal partners in what mainstream is for a bicultural nation (as the Treaty calls for). Having successfully gained momentum for this cause, Hori's final act in this provocation was to take our county's current name, New Zealand, back to Zeeland, in the Netherlands—from where, thanks to the explorer Abel Tasman, it came and where it should have stayed.

Maori Knowledge has Come out of Hiding and is Now in the Bright Light of Day[50]

Reflecting back on Raizman's thoughts that design had sought (and maybe still seeks) to create an ideal world by unifying it so that all may live in harmony with society, the tenets imposed to foster this and the cost to many of the resulting hegemony are, in our opinion, too high to consider maintaining them. So, in the spirit of the 'We are Aotearoa Campaign', we, I, say: 'Thank you, but design in Aotearoa New Zealand has come of age, we are re-charting our course, re-calibrating our borderlines, and reviewing the conditions of our seas'. An important reminder at this closing stage is our appreciation of Aotearoa as a part of our Pacific Ocean and as a part of a 'sea of islands' whose individual health and well-being, or conditions, are as important to the distinct entities as they are to the collective pasts, presents, and futures of those islands and seas.

49 D. Angelo Martin, 'Māori Artist Takes Kaupapa to Officialise the Name 'Aotearoa' on the Road', *Newshub*, accessed 12 January 2023, www.newshub.co.nz/home/new-zealand/2022/05/m-ori-artist-takes-kaupapa-to-officialise-the-name-aotearoa-on-the-road.html.

50 Mead, 'Tikanga Māori', 2.

Let's appreciate, as Bucky asked us to, that 'there is no space there are only relationships'. Let's appreciate that we are all islands, but collectively live on one island—sharing the wind, the seas, and the sky as they move and shift across the earth impacting our conditions but perhaps more, or just as importantly, offering connection; and if we care to listen, informing us of the conditions of others.

This chapter circles back to the principles of equality, co-operation, and self-determination that are fundamental to commoning and offers manaakitanga, *nga manakura* [empathy towards all that connects us], and kaitiakitanga as enabling new ways of being-in common and in difference, but in all these ways designing more positive, inclusive, sustaining, and sustainable relationships by our peoples and for our places.

Glossary

Akoranga	the fluidity and longevity of reciprocity
Hāpi	beer hops
He Reo e Rangona, Engari he Kanohi Kitea	a voice may be heard but a face needs to be seen
Hoki Whakamuri Kia Anga Whakamua	let us walk backwards into the future
Kaitiaki	guardians
Kaitiakitanga	active guardianship through the recognition of responsibilities 'to' people and place
Kotahi Te Kohao o Te Ngira e Kuhuna ai Te Miro Ma, Te Miro Pango, Te Miro Whero	there is but one eye of the needle, through which the white, the black, and the red threads must pass
Mana	respect
Manaakitanga	the care offered
Mātauranga Māori	Māori knowledge
Mauri	life's essence
Nga Manakura	empathy towards all that connects us

Pākehā	European New Zealanders
Rangatiratanga	self-determination
Ta-Vā	Tā being time, and Vā being space
Tangata Tiriti	non-Māori people of the Treaty
Tangata whenua	the original inhabitants of the Land
Taonga	treasures
Te Ao Māori	the Māori worldview
Te Reo	Māori language
Te Tiriti o Waitangi	the Treaty of Waitangi
Teu la Vā	eternal connections
Tikanga	Māori values and protocols
Whai mātauranga	curiosity
Whakapapa	lineage
Whakapapa	origins
Whakataukī	saying
Whakawhanaungatanga	deep connection
Whanaungatanga	authentic connections through collaboration

De-Anthropocentrizing the Microbial Commons

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Introducing Biodesign

This chapter explores how it is possible to co-constitutively design with a living world that is built on the contributions of many species of organisms, whose investments in the creativity of nature are made over deep time. Founded on the new insights and toolsets of biotechnology, biodesign makes a persuasive claim: to integrate design with biological systems, enabling practices to achieve better ecological performance[1] by generating a range of methods, products, and pedagogical frameworks that aim to enliven rather than deplete our world.[2]

The term was first popularized within architecture and design in 2012 when William Myers and Paola Antonelli curated the 'BioDesign: Nature + Science + Creativity' exhibition. Aiming to identify more 'sustainable approaches to building and manufacturing', the selected practices innovatively altered and incorporated living organisms, or tissues, into the design process.[3] Exemplars ranged from Kate Orff and SCAPE's 'Oystertecture', Philips Design's 'Microbial Home', Julia Lohmann's microbial mural 'CoExistence', Suzanne Lee's microbial cellulose garments 'BioCoutureTM', and the Wyss Institute's 'Lung on a Chip'—forming a cabinet of bio-curiosities that collectively articulated a new relation between nature and the history of architecture, art, and industrial design.[4] Raising the status of the more-than-human realm, this new field of biodesign invoked a qualitatively different relationship with matter than was typical of industrial production protocols, where the environment was no longer a backdrop for human action, but was recognized as a powerful actor on the world's stage.

1 William Myers and Paola Antonelli, ***BioDesign: Nature, Science, Creativity***, Museum of Modern Art, 2012.

2 Rosi Braidotti, ***The Posthuman***, Polity Press, 2013, 22.

3 Myers and Antonelli, ***BioDesign***. The term 'biodesign' is also adopted in scientific fields such as medicine where the body's scaffolding is used to guide cell culture and in the molecular engineering of biology. Stefanos Zenios, Josh Makower, and Paul Yock, ***Biodesign: The Process of Innovating Medical Technology***, Cambridge University Press, 2009, 39.

4 Kate Orff, 'Oystertecture', in Myers and Antonelli, ***BioDesign,*** 56–57; Philips Design, 'Microbial Home', in Myers and Antonelli, ***BioDesign***, 96–101; Julia Lohmann, 'Co-Existence', in Myers and Antonelli, ***BioDesign,*** 218–21; Suzanne Lee, 'Bio-Couture', in Myers and Antonelli, ***BioDesign,*** 108–11; Wyss Institute, 'Lung-on-a-Chip', in Myers and Antonelli, ***BioDesign,*** 94–95.

Role of Microbes in Biodesign

Owing to biodesign's foundational relationship with biotechnology, microbes are the mainstay testbed where new protocols for design are largely developed, creating a platform for transspecies collaboration—specifically, between people and microbes. Small, versatile, metabolically robust, extremely diverse, superabundant, biologically alien (in comparison with multicellular organisms), and existing within an ethical grey zone (with respect to their relationship with humans),[5] microbes provide a system for catalyzing radically new forms of environmental relationships through biodesign practices. Importantly, microbes are fundamentally environmental actors, transforming their surroundings into high value biological compounds by using their unique metabolisms to work within the carrying capacity of their different sites.[6] Drawing on these circular characteristics, biodesign engages a spectrum of microorganisms (bacteria, yeast, fungi, algae) to produce new categories of low impact products such as building substrates,[7] which incorporate microbially co-produced materials into experimental installations, packaging, furnishings, and indoor spaces (Fig. 1). For example, the 'living' tapestry designed for the 'New Evoluon: Training the crew of spaceship Earth' developed by Rachel Armstrong and Tria Ningsih incorporated mycelium as a co-designer/artist of the work, forming intricate detail too fine for a human hand. Within industry, 'BioMason' uses bacteria to cure sand into bricks using an active calcite precipitation process that completely foregoes the need for kilning.[8] Bacterial spores are mixed into concrete in bio-concrete and are triggered to generate a biological mineralization process on the entry of water into cracks, which seals them,[9]

5 Charles S. Cockell, 'Microbial Rights?', *European Molecular Biology Organization Reports*, 12:3, 2011, 181; Rachel Armstrong, 'Biodesign for a Culture of Life: Of Microbes, Ethics and Design', in Dan Lockton, Sara Lenzi, Paul Hekkert, Arlene Oak, Juan Sádaba, and Peter Lloyd (eds.), *Design Research Society 2022*, Bilbao, 25 June – 3 July, 2022. www.doi.org/10.21606/drs.2022.144.

6 Benjamin J. McFarland, *A World from Dust: How the Periodic Table Shaped Life*, Oxford University Press, 2016, 117.

7 Myers and Antonelli, *BioDesign*.

8 Biomason, 'Revolutionising Cement with Biotechnology', 28 April 2022, www.biomason.com.

9 Henk M. Jonkers and Erik Schlangen, 'Development of a Bacteria-Based Self-Healing Concrete', in Joost C. Walraven and Dick Stoelhorst (eds.), *Tailor Made Concrete Structures: New Solutions for our Society*, Proceedings of the International Federation for Structural Concrete (FIB) Symposium, 2008, 425–430.

while the Bio Intelligent Quotient (BIQ) building in Hamburg, Germany actively cultivates microbes in architectural-scale bioprocessors and established the first bioreactor façade that produces energy, controls light, and provides shade. Additionally, a range of artisan products and materials co-produced by microbes are now available to designers and other interest communities including mycelium biocomposites (e.g., Grown.bio,[10] MOGU,[11] and BIOHM[12]), bacterial cellulose (the BioCouture community[13]) and biocement (Biomason), while microbial energy sources are generally installed in public spaces such as Pee Power® to charge mobile phones.[14]

Fig. 1: Preparation of a microbial canvas made of waste materials, which are subsequently inoculated with various mycelium spores and cultivated to form a tapestry co-composed by human and fungal designers at the BioTecC+ laboratory, Ghent, KU Leuven, Belgium. The final work, 'Home Grown', was developed as a collaboration between Rachel Armstrong and Tria Ningsih and installed at the 'New Evoluon: Training the Crew of Spaceship Earth' exhibition held at the Evoluon, Eindhoven. Photograph courtesy of Tria Ningsih, 2022. © Tria Ningsih. 5 × 13 squares of material 30 × 30 cm² are being organized into a large tapestry. A student organizes the pattern which is formed from a patchwork of cardboard, cotton canvas, and jeans.

10 Grown.bio, 'Packaging and Interior Design Products Naturally Grown', 6 April 2022, www.grown.bio.

11 Mogu, 'Radical by Nature', 28 April 2022, www.mogu.bio.

12 Biohm, 'Bio-Based Materials', accessed 28 April 2022, www.biohm.co.uk.

13 Suzanne Labarre, 'BioCouture: High fashion Grown from Microbes', *Fast Company*, 7 December 2010, www.fastcompany.com/1661890/biocouture-high-fashion-grown-from-microbes.

14 Xavier Alexis Walter, Irene Merino-Jimenez, John Greenman, and Ioannis Ieropoulos, 'PEE POWER Urinal II – Urinal Scale – Up with Microbial Fuel Cell Scale-Down for Improved Lighting', *Journal of Power Sources* 392, 2018, 150–158.

Microbial Commons in Nature

> 'A microbial city organises itself into a model of efficiency, although to us, it just looks like striped slime'.[15]

Our world is fundamentally microbial. Microbes are the oldest, most numerous, diverse, and robust of all creatures, whose two to three billion species account for ninety percent of the planet's biodiversity. Since microbes are fundamentally environmental, their metabolic systems establish a fundamental, transactional system—or 'economy'—all around us. Their environmental chemosynthetic contributions were first established in the late nineteenth century by Sergei Winogradsky who recognized the vital role they played in biogeochemical cycles, especially those involved in the cycling of nitrogen and sulphur compounds.[16] Progressing along with developments in biochemistry,[17] microbes proved to be metabolically diverse, specializing in metabolic variation and rapidly adapting to different habitats and niches. Such versatility enabled them to be further categorized according to their morphological, metabolic, and biochemical differences. Generating energy and nutrients from their surroundings, microbes break complex compounds down into simpler ones, which are compiled into biomass, or even contribute to mineral formation and elemental cycles.[18] For example, the family of microorganisms known as *Cyanobacteriaceae* changed the early Earth's whole reducing atmosphere to an oxidizing one through the process of photosynthesis during the Archaean Era (4,000 to 2,500 million years ago). The diverse and varied metabolisms of microbes provide a range of 'goods', comprising a range of biomolecules that enrich ecosystems through the choices their constituents can make in terms of their global exchange in the living world. Forming

15 McFarland, ***A World from Dust***, 117.

16 Martin Dworkin and David Gutnick, Sergei Winogradsky: a Founder of Modern Microbiology and the First Microbial Ecologist, ***FEMS Microbiology Reviews***, 36:2, March 2012, 364–379.

17 Edward Buchner discovered chemical reactions within cells, which differentiated metabolism from the biological study of whole cells and established the independent foundations of biochemistry; Wilson A. Bryan, Jonathan C. Schisler, and Monte S. Willis, 'Sir Hans Adolf Krebs: Architect of Metabolic Cycles', ***Laboratory Medicine***, 41:6, 2010, 377–80.

18 Joanna Thompson, 'Life Helps Make Almost Half of All Minerals on Earth', ***Quanta Magazine***, 1 July 2022, www.quantamagazine.org/life-helps-make-almost-half-of-all-minerals-20220701/.

a basic currency that enables organisms to grow and change with time, the microbial commons also promote biodiversity. Over the aeons, microbial communities have used their commons to invent all major forms of metabolism, multicellularity, nanotechnology, organic metallurgy, sensory systems, locomotive apparatuses, reproductive strategies, community organization, metabolism, and mineral conversion platforms.[19] Without the microbial commons, life as we know it, would simply not exist.

Science and the Microbial Commons

With the rise of molecular biology, the importance of shared microbial goods as the basis for research was increasingly recognized in the life sciences. Depending on the generous exchanges of microorganisms among culture collections, laboratories, and researchers worldwide, the scientific understanding of microbes was advanced through open research activities. With the availability of new tools through which to manipulate the molecules of life, specifically DNA, the value of microbes as a tool for asking and testing new questions about life became increasingly important. Owing to the funding systems, however, and returns on molecular biology products, 'ownership' through patents and intellectual property rights on microbial products became an imperative, thereby restricting access to biological resources through Intellectual Property (IP) protections. This precipitated a backlash from the scientific community, which regarded access to this 'commons' of molecular tools provided by microbes as a counterpoint to exclusive, capitalized access to important bioinformation for biotechnological innovation. Restricted access to microbial platforms also creates challenges for biodesigners in developing the required knowledge for working with and applying microbes safely.

Accessing the Metabolic Economy

The value of the microbial commons lies in its fundamental relationship to the living realm, providing the transactional system, or economy, that supports the base of the biosphere. The term

19 Lynn Margulis, *Symbiosis in Cell Evolution*, W. H. Freeman, 1981.

'economy' can also be traced back to the Greek word *oikonomia*, which is composed of two words: *oikos*, usually translated as household, and *nemein*, indicating 'management and dispensation'.[20] Thus, oikonomia refers to household management, which is broadly linked to the idea of domestic budgeting but has little or no relevance to contemporary economics. Implemented through building bioprocessors that operate as specific sites for microbial flourishing, organic waste is traded for microbial resources. The resultant biochemical transformation results in a 'currency', which is based on the microbial production of electrons, which flow between biomolecules and can be captured using conventional electronics systems to provide electrical power and data for digital systems. Situating design at the interface between the biochemical metabolic realm and the electrical world of the digital platform enables the formation of a legible, real-time communications platform between human and microbe.

Identifying microbial metabolism as the operating system of both the biosphere and oikos enables its actualization as an oikonomy based on local habits, domestic resources, and personal rituals—the limits of which are established by what waste streams can provide rather than by the unlimited lifestyle promises promoted by the marketplace. The impacts of a domestic microbial economy can, therefore, be realized and evaluated using the scientific principles of metabolism within the domestic sphere. Functionally operating in a similar manner to natural soils, microbial communities can provide a site-specific economy comprised of many biospherical 'services' such as generating nutrients to grow food, cleaning water through both the biological removal of organic matter, producing bioelectricity, and detoxifying contaminants.[21] Within this expanded economic environment of metabolic exchange, the metabolic (economic) potency of microbes can be unleashed to provide, for example, new kinds of ecosystem services that detoxify our resource streams or produce high value substances like vitamins that are deployed to further promote the life-supporting qualities of our domestic acts of daily living. All these activities can be benchmarked

20 Dotan Lesham, 'Retrospectives: What Did the Ancient Greeks Mean by *Oikonomia*?', *Journal of Economic Perspectives*, 30:1, 2016, 225–238.

21 Susan V. Fisk, 'The Economics of Soil', *Soil Science Society of America*, 11 February 2014, www.soils.org/news/science-news/economics-soil.

against their relative environmental embeddedness, changeability, biodegradability, and soft (microbial) power-sharing, embodying a 'designed and de-anthropocentrized microbial commons'.

Design for the Microbial Commons

My work seeks to establish a new, technologically mediated, and symbiotic relationship with microbes for a life-promoting, circular resource economy that starts in the home, and which is discovered, explored, and designed through pioneering, interdisciplinary experimental systems.

Providing a robust framework for the development of (micro)economic actions, the de-anthropocentrized microbial commons has the potential to transform overall building impacts by introducing resource circularity into the heart of our living spaces. Instead of operating within the axes of public/private exchange owned by the few that typifies the consumption-led impetus of capitalism, the domestic environment promotes regenerative processes as the basis of our activities of daily living through a new relationship between human and microbe. Moreover, the home offers a politically transgressive context where, facilitated by civic action, resources can reach those in need via the human commons, where shared public resources can be accessed by all—from the production of waste, to soil, to community spaces. In this sense, a household is a spatial system that supports the collective needs of its inhabitants through transactional relationships, which can alter the function and environmental impacts of the space through its actions shaped by the principles of microbial metabolic exchange.[22]

The concept of and access to the de-anthropocentrized microbial commons is based on a 'situated communality' between participants, whereby the health of an ecosystem (home, village, city, landscape, wilderness) is based on communities of interaction and exchanges that operate according to agreements and values defined by that specific group of collaborators, i.e., human + microbial + all other specified agentized actors. With the potential to change

22 A microbial household is defined as a space that supports the needs of all its inhabitants whereby the more inhabitants there are, the more waste is produced, which provides more resource for microbes, so the more transactional goods can be exchanged.

human value systems (specifically with respect to our relationship with waste), alter habits via daily rituals (such as hygiene), and expand notions of technology (through the possession of living characteristics), the de-anthropocentrized microbial commons provides a resource that can be accessed through biodesign to align the impacts of human inhabitation with those of nature.

Bioelectricity: A Currency for the Microbial Commons

Conceived as a circular system and microeconomy, microbial systems are integral to the household community and require their own space. In this expanded notion of the home that welcomes microbes, a resource has a different value depending on which community member is using it. Specifically, the organic waste produced by inhabitants (urine, faeces, food waste, grey water) provides microbial resource (food) that is transformed downstream into a range of household goods (bioelectricity, biomass, bioremediation, high value compounds like vitamins), from which further waste is produced. Since microbes, and their metabolisms, cannot be seen with the naked eye and work on a different timescale than humans, an accessible approach for monitoring the status of the system and the health of its microeconomy and community is required.[23]

Typically, microbial activity is deciphered using the tools of biochemistry. In human terms, these chemical signals are quite slow and are often associated with different forms of detectable electron transfer. By incorporating electrodes into the system, the bioelectricity produced by metabolic reactions can be directly observed as an indicator of overall domestic (electrogenic) metabolic activity.[24]

The importance of bioelectricity as a household resource and system for translating between the human and microbial realms in this context cannot be overstated. Providing a supply of low power 'energy', the electrons generated by microbes in the process of metabolism also provide real-time information about biofilm activity

23 The mismatch in time scales between human and microbes may be considered through the average reproduction timescales: 20 minutes for microbes, while for humans, this is around 20 years.

24 Catherine Brahic, 'Meet the Electric Life Forms that Live on Eure energy', *New Scientist*, 16 July 2014, www.newscientist.com/article/dn25894-meet-the-electric-life-forms-that-live-on-pure-energy.

(e.g., thriving, under stress, stable), and bring about chemical change in the system as the result of the loss or gain of electrons associated with a molecule, which alters its physical properties.[25] Technical systems that can harvest and deploy these electron flows are called BioElectrical Systems (BES), a typical example of which is the Microbial Fuel Cell (MFC), which is an organic battery that turns organic matter into bioelectricity.[26]

The following precedents offer a series of case studies based on my own work through collaborative interdisciplinary partnerships. They provide working prototypes that demonstrate how the microbial commons can be accessed within the household and ultimately scaled out to the community and city for broader uptake. Establishing the principles of practice and modes of inhabitation that enable regenerative human developmental impacts, some apparatuses like the 'Living Architecture' project[27] are exclusively realized in laboratory settings to successfully prove their scientific principles; others, such as '999 years 13 sqm (the future belongs to ghosts)'[28] and the 'Active Living Infrastructure Controlled Environment' (ALICE)[29] apparatus, are explored as artistic research installations in various locations and were successfully powered by microbes.

Living Architecture

The Living Architecture project visualizes the microbial commons bringing the benefits of its potential into the heart of our living spaces. It takes the form of a 'living' combined utilities infrastructure

25 McFarland, *A World from Dust.*

26 Michael Cressé Potter, 'Electrical Effects Accompanying the Decomposition of Organic Compounds', *Proceedings of the Royal Society B*, 571:84, 1911, 260–276.

27 Rachel Armstrong, Simone Ferracina, Gary Caldwell, Ioannis Ieropoulos, Gimi Rimbu, Andrew Adamatzky, Neil Phillips, Davide De Lucrezia, Barbara Imhof, Martin M. Hanczyc, Juan Nogales, and José Garcia, 'Living Architecture (LIAR): Metabolically Engineered Building Units', in Dirk E. Hebel and Felix Heisel (eds.), *Cultivated Building Materials: Industrialized Natural Resources for Architecture and Construction*, Birkhauser, 2017, 170–177.

28 Robert Bevan, 'Is This Tomorrow? Review: Installations Show a Troubled Mood of the Future', *Evening Standard*, 14 February 2019, www.standard.co.uk/culture/is-this-tomorrow-review-installations-show-a-troubled-mood-of-the-future-a4066551.html.

29 ALICE, Active Living Infrastructure: Controlled Environment, 10 June 2022, www.alice-interface.eu.

that can turn liquid household waste, like urine and grey water, into valuable resources (electricity, biomass, water, reclaiming phosphate from washing-up liquids and removing poisonous gases from the air) that can be re-used in the household (Fig. 2) to cut down on electricity and utilities bills, as well as the amount of untreated waste we put into the environment. The performance of the biofilms is optimized using an AI, powered by MFCs, to operate simple mechanical controls that deliver feedstock where it is needed within the arrays. Enabling the smarter use of electrons as a domestic currency, multiple tasks are performed within the apparatus—from generating power to providing data and enabling metabolic transformations, which are compatible with the overall carrying capacity of the proposed household system. Through the creation of an accessible space for exchanging shared goods by the various household communities (humans, microbes), resources are used in a variety of ways. Founded on the (re)utilization of organic waste, microbial applications comprise a regenerative technological platform and infrastructure that converts domestic waste streams into a kind of 'fractionated composting system'[30] to produce energy (bioelectricity, oils, biomass), useful substances, bioremediating processes (the removal of nitrous gasses), and biologically compatible materials that can be safely discharged.[31] Establishing an economics-first principle, this transactional metabolic system creates an environment for nascent ecopolitical actions such as by linking bioprocessors to charge a 12V battery supply to reduce the household's dependency on fossil fuels. When combined with renewables, microbial technologies create value by bioremediating our waste, and even produce an ecological currency for exchange just by the activities of daily living. So, by eating, going about our routines, and doing our ablutions, the wastes we produce have economic value—even when our lives are spent at home. Valuing the contributions by all who carry out the work-of-life, the different microbial units that make up the 'Living Architecture' system enable those that are not usually regarded as economically productive in

30 Fractionation processes separate mixtures of liquids, gases, or solids into their individual components. The typical example is the distillation of crude oil into its various fractions: gasoline, kerosine, diesel oil, lubricating oil/bitumen. Fractional separation is based on differences in a specific property of the individual components that allows specific products to be reclaimed.

31 Armstrong et al., 'Living Architecture (LIAR)'.

a capitalist economy to have value within the microbial commons. Re-centring the site of value creation within the domestic sphere, our homes become wealth-generators. Inhabitants now have choices to make about how they use this ecological resource: perhaps they can reduce their own living costs but maybe too, they can donate some of their well-earned resource (formerly called 'waste') to help others.

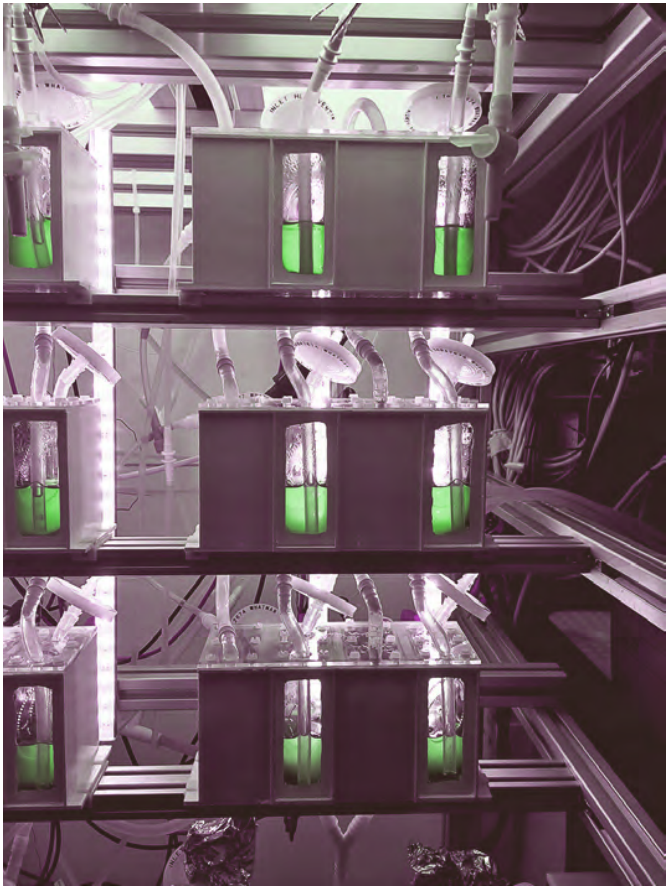

Fig. 2: Detail of the fully inoculated Living Architecture 'wall' and apparatus installed at the University of the West of England, Bristol. Photograph courtesy of Rachel Armstrong, the 'Living Architecture' project, 2019. © Rolf Hughes. A section of a bioreactor array showing three stacked units within the 'living' wall that houses microbes in a large apparatus about the size of a bookcase.

999 Years 13sqm (the future belongs to ghosts)

The installation '999 years 13sqm (the future belongs to ghosts)', discusses how systems that bring the microbial commons into our living spaces may be experienced. It was developed for the 'Is this Tomorrow?' exhibition at the Whitechapel Gallery, London, in collaboration with artist Cécile B. Evans; we used the natural biofilms

from the Living Architecture project to power an array of 15 MFCs, which was housed in a protected volume to the left of the space (Fig. 3). The Perspex and steel construction acted as a screen upon which a near future scenario was projected and which occupied the minimal housing space legally possible in London (13sqm) being conferred with the longest possible lease (999 years). Occupied only by microbes, the only observable traces of humans were digital manifestations of the human past, present, and future (ghosts), which were conjured by the microbial inhabitants from their wastes. While the space itself was an artistic rendering of a posthuman apartment and was, therefore, unoccupied by human inhabitants, the system still symbiotically depended on 'us'. Natural biofilms within the MFC array were routinely fed with human waste that was introduced into the large black box at the top of the MFC array once a week. At the same time, the microbial excrements produced by this process (cleaned water and biomass) were collected in a black container at the bottom of the complex and removed from the apparatus. The products of this 'remote' symbiosis provided the bioelectricity to power the 'inner life' of the space, which was made visible by a screen-based system and a projection of a bird onto a wall of mist, a symbolic figure from the artist's films, continually rose in flight, only to fall again, cycling between life and death. The high level of autonomy demonstrated by BES through sustained metabolic transactions afforded by the microbial commons confronted audiences with the notion that our near-future microbial homes could eventually become independent from us. Highlighting our interdependencies, the installation's visible separation between microbes and 'us' emphasizes how poorly modern society values the microbial and discards nutrient-rich resource streams as 'waste', requiring us to adopt an ethical position in relation to how we use resources and occupy our shared living spaces. Inviting microbes to perform 'housework' catalyzes metabolic transactions where we live differently alongside microbes, acknowledging them, caring for them and exchanging our waste with them in exchange for a range of services from cleaning wastewater to eliminating pollution provided by the installed metabolic economy. While the bioenergy levels produced by the BES ultimately generate around 12V using parallel arrays of MFC units, the electrical outputs are much lower

than compared with fossil fuels that are delivered to our homes as 230V power supplies. From an ecological perspective, these limits are creative as they encourage more considerate patterns of resource consumption that are fundamentally life-promoting.

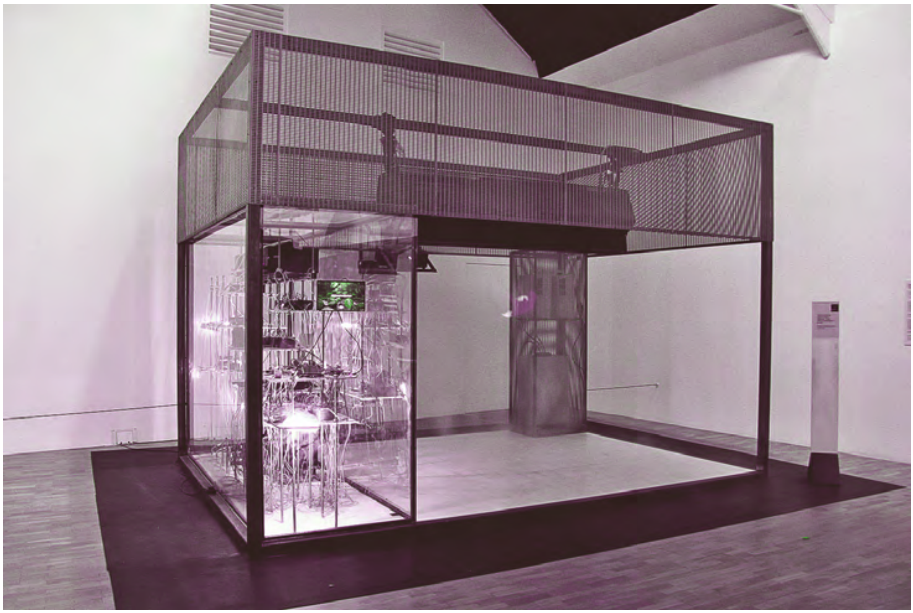

Fig. 3: The installation '999 years 13 sqm (the future belongs to ghosts)' is an arts installation embodying a posthuman apartment comprised of a bank of MFCs and digital screens. The installation is by Cécile B. Evans and Rachel Armstrong for the 'Is This Tomorrow?' exhibition at the Whitechapel Gallery, London. Photograph by Rolf Hughes, 2019. © Rolf Hughes. Posthuman apartment emitting light, which is inhabited by a bank of organic batteries on the left of the installation.

Active Living Infrastructure: Controlled Environment (ALICE)

To visualize the metabolic economy at the heart of transactions between humans and microbes within the microbial commons, the Active Living Infrastructure: Controlled Environment (ALICE) prototype (2019–2021) generates an interface for collaboration with microbes by establishing the principles for a real-time 'language'. Using electrons produced by the anaerobic biofilm of 15 MFCs as 'data', the prototype explored how a direct, real-time link between bacterial metabolism could be made using electronic systems that can interpret and visualize this data. Electrical activity from the biofilm was a source for both power and data, which was translated

by software into animations that conveyed the overall status of the biofilm in relatable terms. Audiences could, therefore, respond to the microbial behaviour, not by looking at unpleasant 'slime' (the natural 'face' of microbial colonies), but by interacting with appealing forms on a familiar screen-based interface. Since BES are living, possessing a force and agency of their own, they require our appropriate care and attention if they are to engage with us in a productive, symbiotic manner.[32] Possessing a very particular kind of environmental intelligence, much can be learned from bacterial data, which reveals a great deal about the character of a place. By generating a relatable communications interface, participants can play with resident microbes through data and performance in an exploratory exchange, as if they were a pot plant, or even a pet. This world of 'Mobes', a characterful term coined for the data-based representations of microbes, offers a simple, probiotic approach to interspecies communication within the highly situated realm of microbes, in a relatable manner that could even become part of our everyday routines. Being in conversation with, rather than 'exploiting', microbes means we may start to learn-along-with them through their ability to generate clear and direct signals and data that relate to shared concerns, like transforming waste streams into household resources based on new value systems that invite different kinds of (house)work and domestic routines for our living spaces. ALICE exists as a permanent online exhibit and can be accessed under the section Bio-Digital Interface by clicking the Launch Artwork button, where visitors are taken to an animated set of 'Mobes' (Fig. 4). On selecting different options from drop-down menus, the environmental parameters (temperature, pH) and performance (power output) of a real-world microbial community can be interrogated that inhabits a permanent MFC array installed in a scientific laboratory. Depending on how the visitor reads the health of the microbes, they can respond to the 'Mobes' by feeding them using a remotely operated valve system, or by speeding up their metabolisms by activating a LED to warm them gently. The graphical symbols provide a language where factual propositions (environmental parameters) are represented and where further truths can be inferred to directly, or by means of a calculating

32 Maria Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More Than Human Worlds*, University of Minnesota Press, 2017.

system, which can be overridden by human intervention. In ALICE's case, these calculations are performed by the system software, but in the case of Living Architecture, an artificial 'intelligence' powered by the MFCs observes the system and adjusts the inputs to optimize its performance accordingly.

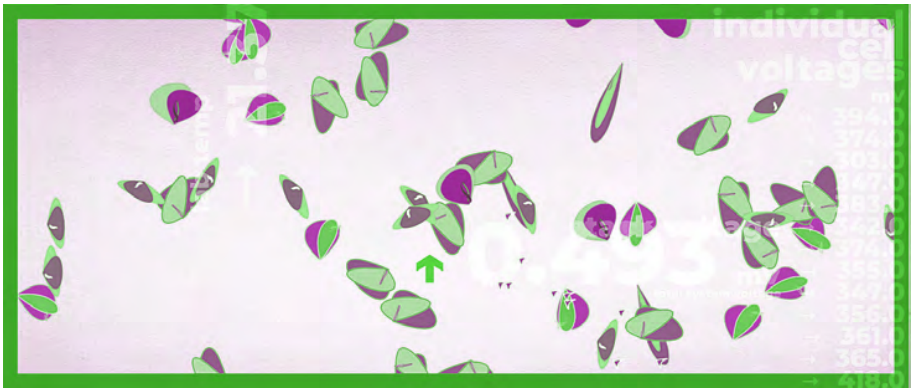

Fig. 4: 'Mobes', from the ALICE website (www.alice-interface.eu) showing dynamic, interactive, graphical representations of microbes, courtesy the ALICE consortium, 2021. © ALICE, screenshot from website.
Digital animation patterns in yellow, grey, orange, and blue that are reminiscent of butterflies that represent different parameters, which influence microbial activity inside the ALICE apparatus.

ALICE also exists as a real-world installation that premiered at the 'Digital Design Weekend', V&A, London, UK, as part of the London Design Festival from 24–26 September 2021[33] and was installed at the Electromagnetic Field Festival, from 2–5 June 2022 (Fig. 5).[34] Inviting meaningful human/microbial transactions (if I give you food then will you give me data, chemistry, and power?) as a *modus operandi* for the microbial commons, ALICE demonstrates the potential for BES to become creature-like. Collectively, these living microbial installations suggest that various kinds of biodigital interfaces between humans and microbes can establish readable and even relatable transactional platforms that transform household wastes into new resources, like natural soils. The combination of microbial 'flesh', traditional electronics, and artificial and microbial intelligence confer the work with the status

33 Marc Barto, 'Digital Design Weekend', 23 September 2021, www.vam.ac.uk/blog/design-and-society/digital-design-weekend-2021.

34 Electromagnetic Field Camp, 'Pee is Powerful! From Artwork to New World Infrastructures with ALICE', 4 June 2022, www.emfcamp.org/schedule/2022/307-pee-is-powerful-from-artwork-to-new-world-infrastructures.

of microbial cyborg,[35] a relatable entity that does not ooze, stink, or repulse. In all its situated expressions, ALICE is becoming the human-relatable face of the microbial realm that invites new relationships, interactions, and inter-species understanding. Centring our experiences on household economics as a way of unleashing situated ecopolitical decisions, ALICE offers assistance in making (micro)'economic' decisions, changing how we use resources and organizing our living spaces so that our environmental impacts change from being merely consumptive to being life-promoting.

Fig. 5: The ALICE installation, a transparent orb powered by microbes that animate LEDs and iPads. The work was installed at the 'Electromagnetic Field Festival', Eastnor, June 2022, embodying the bio-digital platform through the integration of microbial and artificial intelligences with biological and technical bodies. Courtesy of the ALICE consortium: Ioannis Ieropoulos, Julie Freeman, and Rachel Armstrong. © ALICE, photograph by Rachel Armstrong.
Clear orb in the centre of the photograph which is lit by LEDs and iPads powered by microbes. Two gallery visitors wearing top hats are observing it.

35 Donna J. Haraway, 'A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century', in *Simians, Cyborgs and Women: The Reinvention of Nature*, Routledge, 1991, 149–181.

Reflections on Near-Future Developments

Twenty-first-century scientific insights have shown how the microbial realm comprises a foundational platform that can enliven the world. Advances in the field of biodesign indicate how microbial systems may be designed and constructed within the built environment to lessen the impacts of modern construction systems and bring about regenerative human development. Cutting-edge developments in BES can help free up the radical 'economic' potential of the microbial commons within a domestic setting by exploring the principles of a nascent metabolic transactional system. The case studies 'Living Architecture' and '999 years 13 sqm (the future belongs to ghosts)' demonstrate how poorly valued materials like liquid organic waste are transformed by microbial action within the microbial commons into a range of valued resource streams (water, organic molecules, bioelectricity). The implementation, negotiation with, and sustained, equitable uptake of microbial goods from these BES prototypes requires an interface that is accessible to humans and microbes. Drawing on the ability of electrogenic microbes to produce bioelectricity, the ALICE apparatus provides important insights into how these systems will inform and shape the rituals of daily life like a domestic currency where, instead of only consuming resources, we are also caring for our living spaces by 'feeding' them. When scaled to the level of community engagement, such 'living' infrastructures also provide access to an urban scale microbial commons that can be deployed effectively in the public realm, where waste streams can be upcycled as microbial goods. Those products that are not consumed will nourish the biosphere thereby increasing the overall life-bearing potential of a site. Through our creative, conscious, and designed engagement with the microbial commons, the human species can transform its negative industrial impacts into a fundamentally enlivening force within the biosphere.

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Do We Need Mediators for the Commons?

Katherin Gutiérrez Herrera

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The music is romantic Vallenato; it comes from a loudspeaker that the upstairs neighbour placed outside their door, facing the street. This community party started some weeks ago, when a group of teenagers got together to decorate the street for Christmas, knocking on every door to collect money and materials. It's 1998. I am a six-year old in a low-class neighbourhood in Pereira, Colombia—a city known for its civic participation, where some of the biggest infrastructural projects have been developed as a result of initiatives from communal actions and 'Convites'. I helped paint a huge Santa Claus on a sledge being pulled by reindeer—on a street that has seen neither snow nor reindeer—with friends who, like me, believed that it was baby Jesus, and not the Coca-Cola bearded man, who brought the gifts. There's a latent energy. It feels like something exciting is happening; the streets feel safer, and everyone's invited, regardless of their age, house, or class. Children are running around with chalk and paint while some of the wealthier grownups, the homeowners of the neighbourhood, collect money for the materials, the pig, and the drinks.

El Convite (Spanish) or *La Minga* (as it is called in different contexts, in Quechua), is a custom inherited from native ancestors by which small communities or neighbourhoods join forces to solve common problems, usually related to the infrastructure of common spaces or distribution of resources. These kinds of events are the more accessible, informal option in which a citizen participates in their own community, whether it's a group of children decorating a street or a retired coffee collector filing a petition to build a sewage system. For this party, the resources were there, the community was ready, and it only took some teenagers with initiative, time, and familiarity to make it happen.

Now, years later, I find myself living in Germany. I read the works of European scholars trying to figure out how grassroots initiatives can have more support and agency in European cities. They write about the impact of local solutions for poor, migrant, or Global South communities and try to find ways to replicate them, to create platforms for people to share resources. I see German architects and urbanists partnering with communities in Colombia to reactivate Convites[1]; at the same time, I walk the streets of the little German town I live in and see people going to work alone in one car, leaving their used clothes in containers that will end up flooding

1 *Urbanlab Medellín Berlin* (n.d.). Retrieved 25 September 2022, from www.urbanlabmedellinberlin.com.

African streets, or gardens and land that are never used because the owners are never there. In this world, where everyone is hustling to win the capitalist race, how could people see local solutions when there are no apparent needs? Infrastructure is managed by institutions. Everybody works all day and people who are concerned about their surroundings do not get paid to do so.

> The commons allows for a re-organization of the current destructive logic of production and value creation, by combining a global-local response to material and scientific challenges, and by creating sustainable logics of products and services that bypass the need for planned obsolescence.[2]

The efforts that fall into the creation of urban commons should also be directed to the parts of cities and societies that contribute the most to the extractive, ever-growing capitalist system and not just to the people who already work within the logic of commonality. But in order to present the idea to people who cannot see the need for local solutions or identify the local problems, we need mediators: people like those teenagers organizing a party, who have the time to know their communities, can mediate public and common resources, and are open to inspire commoners.

To better understand commonality, I want to look at my past in Colombia—where the vernacular and the locality were the rule—to reveal the mediating factors we need to look for when designing the commons and present these not as tools or platforms that provide simple solutions, but as instigators for communities to take agency in their own inhabitation.

A few years after the Christmas preparation party in Colombia, I experienced another big Convite. In a different neighbourhood, a retired fisherman and retired secretary led an effort to rebuild the fence that enclosed the residential area to make it safer. At the end of that Sunday, half of the fence was finished, and my mom's hands had little cuts from the grass leaves and the wire. My memory of this day was of an uncomfortable, hot, exhausting activity and I could not understand why everybody was so happy

2 Michel Bauwens and Vasilis Niaros, *'Changing Societies through Urban Commons Transition',* P2P Foundation in co-operation with Heinrich Böll Stiftung, 2017, 21.

about it. They finished the work the following Sunday. The fence was not too strong nor long-lasting, but the feeling of togetherness, of getting the work done, stayed in the neighbourhood for years. Inside jokes were created, two of the neighbour's daughters got jobs through the connections made in the Convite, the retired lady started inviting my mom for coffee, and we started greeting the neighbours by name. This example shows the main difficulty and at the same time the main motivation for community development. On one hand, it is hard: long meetings need to be held to negotiate with people who think very differently from each other; it involves a lot of manual, exhausting labour that occupies free time; tasks are divided unevenly; and the results are often far from the expectations. On the other hand, the closeness and feeling of security that is created in the neighbourhood are so rewarding that people do not mind the hardship, whatever the outcome is. Communities feel more attached to their place and individuals feel more at home.

In Colombia, there is a culture of seeing the commons as an option for solving spatial necessities, increasing community trust, and addressing individual needs. During the time these two Convites occurred (between 1998 and 2003), many political and cultural factors mediated commonality, such as free time and free labour (from young students and retired people), scarcity and mistrust in the government (there were no reliable institutions to go to), permanence and familiarity (the members of the community had a strong and lasting connection to their neighbourhood). This does not mean that the perks of commoning are intrinsic to certain cultures. Each commoning project has its own way of developing, but the context for commoners to work can be facilitated. Even in a culture that is familiar with these practices, an institution needed to be created to mediate civil participation and public resources.

One of the institutions that mediates civil participation and public resources in Colombia is the Junta de Acción Comunal (JAC) [Board of Communal Action]. In my neighbourhood, for example, the JAC built a *Salón Social* [social room]—a convivial place that holds beautiful memories for me as I often took my son there during the Novena [the nine days before Christmas], to tell stories and sing carols with other children from the neighbourhood. Every citizen in Colombia has the constitutional right to form, together with their

neighbourhood, settlement, or small village, a legally recognized group (board) that can organize, apply for state funding, collect resources, sign contracts, and give voice and action to their needs. Not all neighbourhoods in Colombia have a JAC, but until 2008 these amounted to more than 45,000.[3] The JAC can be considered a frontline institution as it is the first entity that citizens come into contact with when seeking help from the government; it is also the platform through which inhabitants of the neighbourhood can propose new plans for structural organization, social life, informal education, and conflict resolution. In the Salón Social, you can celebrate your kid's birthday party, hold gymnastics classes for elders, teach soft skills like weaving and crochet, and host board meetings.

The initiative of establishing a platform for communal action followed a burst of state support for small communities throughout Latin America during the 1950s. After a few years, the government saw the JACs as an opportunity to watch and prevent anti-governmental outbursts, turn off communist uprisings, and control the actions of existing guerrillas.[4] Despite these conflicts of interest, JACs are still very active in Colombia. Compared to unions, the boards of communal action have more members and leave a more evident impact on the communities and urban infrastructure. Unions were formed and led by mostly adult, working men, while in communal action anyone could have a voice and vote. The social dynamics and activities that the JACs engage in to mediate community action—such as openness, programming, caretaking, and establishing common spaces—keep the boards alive even as the community changes. This makes the communal boards an accelerator for the integration of newcomers, which therefore diversifies decision-making power and updates their goals of action.

Women play an important role in fulfilling these social dynamics and activities. As is common in patriarchal cultures, the pervasiveness of women performing care work, not only for their families but for their houses and streets, creates bonds of solidarity, caretaking strategies, and kinship. Although men are usually elected as JAC presidents, the unpaid care labour of women is central for organizing finances, assisting meetings, collecting support, and

3 Juan Carlos Moreno Orozco, 'De Centros Cívicos a Juntas de Acción Comunal. El Cambio de Modelo de Gestión y Participación Barrial en Medellín en la Segunda Mitad del Siglo XX', *Estudios Políticos*, 45, 2014, 185–203.

4 Moreno Orozco, 'De Centros Cívicos a Juntas'.

more. However, being a very conservative society, the openness of the boards has been subverted by religious beliefs, which has led groups to target undesired members of the neighbourhood that in some cases have resulted in violence against marginalized groups.

In recent years the effectiveness of the JACs has deteriorated due to a shift towards values that emphasize individual desires over social support and workers' rights; although JACs continue to function, they are seen as taking away people's time and resources and for enforcing unpaid community work. Overall, the presence of JACs supports the need for systemic public support to communal action but also warns us about the weaknesses of a system that relies on devaluing care work.

Common spaces, permanence, caretaking, openness, programming, free time, scarcity, mistrust of institutions, necessity, loneliness, and rewarding work—these are all factors that play into processes of urban commoning. But of course, these factors are not immediately present in every community. There are places people can pay for the improvements they seek to their lives; places where infrastructure is managed institutionally. People prefer silence and calm above the challenges of meeting often-changing neighbours, where all members of the family hustle for a better future. How to approach commonality in places that seem 'finished' and where people do not seem to need much? The answer to this lies in the main reason commonality even exists: not because of the resources but because of the feeling of connectedness and the 'more-than-human' interactions. Commoning is mainly an experience:

> If the primary focus of commons is not on resources, goods and things, but on interpersonal and human/nature relationships, then institutions of any kind—business, political, civic, educational —must reliably promote three things: respect for ecological boundaries, stable community and voluntary cooperation.[5]

> To speak of the commons as if it were a natural resource is misleading at best and dangerous at

5 David Bollier and Silke Helfrich, *Patterns of Commoning*, The Commons Strategies Group and Off the Common Press, 2015, 20.

> worst—the commons is an activity and, if anything, it expresses relationships in society that are inseparable from relationships with nature.[6]

Many examples of developments in Europe that present solutions involving community engagement generally take two paths. Some are directed towards low-income and/or migrant communities with approaches that seem to suggest that these communities are new and, therefore, editable. Others focus on designing new buildings and neighbourhood projects that contemplate shared resources or activities but are available only to those with the means of purchasing new apartments. Somehow most 'established' neighbourhoods are perceived as finished and difficult to edit.

Where there is a lack of infrastructural opportunity we have the digital commons, including exchange apps that, in trying to cut off the annoying aspects of commonality, miss the point of locality, diversity, and sustainability. Digital commons have undeniably expanded and democratized knowledge and debate, while also supporting alternative economies and closing gaps within cultures and lands, but they still limit their usage to those who are digitally literate and have the time to use it. To create a real local change in resource distribution networks, digital and urban commons need to be 'two faces of urban commoning'.[7] That is, digital commons may support the work of commoners by connecting people and facilitating data and training while maintaining influence and hands-on work in the locality and daily life. Relying only on digital tools without the mutuality of physical presence in the city can make us distracted from the real goals of commoning. The digital sphere has increasingly become noise of our phones, with so many options in the broad, infinite-looking internet world, leading in many discourses to catastrophist conclusions. Instead, small projects within the locality of one's home are the true catalyzers of ideas and actions.

In the case of designers and commoners, a shift in our expectations is necessary. Instead of thinking about commoning as what people in need do, or solely as a solution to an identified problem, we should shift towards the expectation that everyone

6 Peter Linebaugh, *The Magna Carta Manifesto: Liberties and Commons for All*, University of California Press 2009, 279.

7 Adrien Labaeye, *The Role of Digital Commons in a Socio-Ecological Transition of Cities, Doctoral Dissertation,* Humboldt Universität zu Berlin, 2019.

who inhabits the city can enjoy and participate as a commoner, exercising their 'right to the city':

> The question of what kind of city we want cannot be divorced from that of what kind of social ties, relationship to nature, lifestyles, technologies, and aesthetic values we desire. The right to the city is far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city. It is, moreover, a common rather than an individual right since this transformation inevitably depends upon the exercise of a collective power to reshape the processes of urbanisation. The freedom to make and remake our cities and ourselves is, I want to argue, one of the most precious yet most neglected of our human rights.[8]

The feeling of commonality inspires and makes people feel less lonely and certain individuals can spark these feelings. For a long time, artists have promoted the idea of true effective commonality. As a result, artists are often seen as the key figures in the gentrification of impoverished neighbourhoods. First comes the artist, then the galleries, then the investors, then the vegan restaurants, and the old neighbours leave. As an artist and a museum mediator, I wanted to take a leap of agency towards the neighbourhood I inhabited in Germany to inspire people to come up with development projects for our shared surroundings by introducing ideas of commoning to spaces and communities that do not have apparent immediate needs, but that can benefit from the collaborative work and relational ontology of being a commoner. Art here is no longer concerned with the ways or the subjects of representation but the scope of our participation in society. The challenge is to test the limits of interactive art.

There is a man that goes outside every day to talk on the phone. I see him from my window on the third floor of this platten-bau building [slab construction building]. He walks on the pavement road surrounding the green field that fills the space

8 David Harvey, 'The Right to the City', *New Left Review II: 53*, 2008, 23–40.

between the two buildings that, in an L shape, form the student complex I live in. It's November 2020, the middle of the COVID pandemic's on-and-off lockdowns. He walks and talks for hours, and somehow manages to never step on the field, only the pavement. I am fixated on this huge unused plot of grass that became somehow untouchable for him and the rest of my neighbours: young, mostly migrant, and active university students. When the students try to play sports on the field, the neighbours complain; it is forbidden to make grills or fire pits. There's not even a bench. The field is just there to be there, staring back at hundreds of students that are away from home, confined to their rooms, without comfortable open-air spaces to socialize or simply to exchange views.

> I like the silence, but I also feel lonely sometimes. I envy a little bit those people who sometimes go out to play football. Like, I would like to be with them—but of course, I would never approach them.

This was said in one of the several interviews I made throughout the building. The need for some sort of commonality—not only in infrastructure but for companionship and emotional support—became evident. As such, and considering my previous experiences, I decided to approach this through mediation, in order to reveal the gaps in a sort of seduction, instead of proposing a top-to-bottom solution or taking on a full-on activist role. In other words: the artist as mediator between the gap and people's potential for action.

'The Green Field' was a two-week-long participative and performative installation artwork that took place in December 2020. The research and preparation included a short-film open-air screening in the building, several interviews, small activations (like flyers and posters), and a digital backing through an Instagram account. The final installation, which was made with white scaffolding sheets that covered the field in different shapes, could be read on four levels. The first level was participatory: people could write down things that they would like to have in their common space (the field) on posters installed inside the buildings. This method was very effective because participation could be anonymous: just a quick stop to write something on a poster on the way to their

room. The next level was observational: residents could observe the build-up of white lines on the field from their windows, like a life-size architectural floor map, suggesting what could be built there. The next level involved experiencing the installation more actively: people were invited to walk around the field where drawings and handwritten texts on sheets were laid. The messages on these sheets were all aimed at creating imaginaries about the possibilities the field could offer to the community and to everyone's own sense of belonging. The fourth level was the presence, caretaking, and maintenance I performed, becoming a visible daily neighbour that was always available for a word, offering a cup of tea, working on the field, and taking care of the space.

During the installation, the man on the phone started to distractedly walk through the sheets on the field. Even after de-installing, he kept walking the field at a slow pace while talking on the phone every day. People started asking me if something else would happen and if they could help, and someone created a group chat for residents of the buildings.

When designing strategies for sharing—let's say for sharing used clothes—one could create an app that informs and teaches about all the possibilities for handling the exchange. However, often these apps end up including focusing on monetary exchange and profit (such as is the case with Etsy or Vinted) so the interactions become more market-oriented and less about sharing, taking care of the environment, or finding fulfilling activities. Community building feeds human and environmental needs that can only emerge when people have the agency to try and work by themselves. An approach to tackling local problems with local solutions through mediation might require us to re-think the figure of the designer and could lead us to imagine a whole new profession: that of a community mediator.

What if the leaders of community initiatives had access to specialized professionals and knowledge and got paid to activate their neighbourhood? What if engaged teenagers could get training in community programming and local economies and see this as their profession? What if I, as a migrant in a new neighbourhood, wanted to start a community garden and there was a community mediator to go to that could help with activating people and sourcing

the materials? And what if this person could mediate support for someone who wanted to make a business out of used clothing from the same community?

A mediator is not a salesperson, nor a conflict resolution specialist (they can be but don't necessarily have to be) or a researcher. A mediator is someone that, by means of inhabitation, availability, conversation, and programming can facilitate community engagement, connect resources with necessities, focus efforts, and reveal possibilities. A mediator can identify challenges for designers to work on and help activate initiatives in the community. A mediator can accelerate the inclusion of minorities within communities.

Mediation is needed precisely in European communities where the perception stands that there are no present needs that require collective action. Cities that believe themselves to be very advanced and independent are, at the same time, responsible for way more CO2 emissions than the city I was born in. Addressing these issues requires a figure that can draw out possibilities for commoning and that is present in seeking solutions for everyday needs in their locality—not as the maker or administrator but as the inspirer that helps people realize the interdependence in which we inhabit the city.

The Convite from my childhood—that whole week of painting and decorating—is an example of the commons not as a tragic resource for last-minute problem-solving for poor people, but the joyful experience of vitality, human bonding, companionship, and neighbourliness that the local community can build. With mediation, such vitality can become a common part of daily life in every community.

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Product Design in the Desert: Centring a Commons Approach in Design Practice

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Defining Public Lands in the United States as a commons is complicated.[1] Public Lands—Indigenous Lands—are subject to democratic control by (certain, non-Indigenous) citizens, but they are still managed by the state and while they are technically accessible to all, this so-called freedom is derived through violent dispossession of land in which Indigenous people still do not have full access to ancestors, ceremony, and medicine in many of these designations. Public Lands in the United States are not a traditional commons.[2] However, I believe the complex network of communities and agents (including more-than-human beings) who collaborate to manage and steward these places can be engaged as a commons through design.

Traditionally this collaboration has centred the state, the academy, and the scientific disciplines; I am interested in bending this model towards collaboration with and for the community through disciplines beyond science, specifically design research and practice. Design practice can prioritize relationship through a commons lens—and recognize that commons are not universal—while framing the outcomes or products of design beyond merchandise. In this chapter I describe principles for commoning design that we have adopted in the Field Studio at the University of Utah[3] through research, practice, and teaching as mechanisms for design collaboration in and with community. Our design process has emerged from practice—with community—in the field and in the studio. The framework I describe here is an attempt to draw out a theory that emerges from this practice, while also struggling with the tension between the two.[4]

1 I will use the term 'Public Lands' throughout this chapter to refer to the colonized Indigenous Lands in the United States that are not private, but managed in various arrangements by various authorities. The term 'public lands' skips over the violent dispossession and ongoing colonial occupation of stolen lands and so I am uncomfortable using it without caveat. In this chapter I capitalize Public Land(s) as suggested by Max Liboiron, *Pollution is Colonialism*, Duke University Press, 2021, as a way to identify Public Lands as a particular infrastructure.

2 I refer to Elinor Ostrom's suggestion of the commons being run by neither state nor market: 'What one can observe in the world, however, is that neither the state nor the market is uniformly successful in enabling individuals to sustain long-term, productive use of the natural resource systems. Further, communities of individuals have relied on institutions resembling neither state nor the market to govern some resource systems with reasonable degrees of success over long periods of time'. Elinor Ostrom, *Governing the Commons*, Cambridge University Press, 1990, 1.

3 See www.designfield.studio, Division of Multidisciplinary Design, University of Utah.

4 See bell hooks, 'Theory as Liberatory Practice', *Yale Journal of Law and Feminism*, 4:2, 1991.

Commons

The commons trajectory in my design practice has emerged from studying scholars thinking with posthuman entanglements to those explicitly linking care with the more-than-human as alternative methods of knowledge production and world-making.[5] Commons are broadly defined as resources shared and mutually governed by all, but a quick Internet search takes me to the Google dictionary where the first definition on the list for commons is: A dining hall in a residential school or college.[6] Even the dictionary codifies the confiscation of commons language as a tactic in the very enclosures that threaten true commons.[7] Hess and Ostrom articulate the challenges and confusion associated with common-pool resources that most closely align with the 'public lands' designated in the United States and the various property regimes that govern them.[8] Field Studio has evolved in the context of design intervention in these regimes regarding Public Lands—as carried out by communities, tribal nations, and federal and state governments. The studio expands the definition of resource to include sites of cultural heritage and practice, as well as significant tourism and outdoor recreation in addition to the traditional ecological and geological landscapes and so-called natural resources that tempt extractive and agricultural industries. This expansion requires nuance in regard to a general definition of commons resources as 'shared and governed by all' in order to avoid colonial outcomes of appropriating and extracting Indigenous culture, land, and relatives for non-native participants in Public Lands. One failure of Public Lands governance strategies

5 What began as research informing my Ochre practice by way of Marisol de la Cadena, Eduardo Kohn, Rosi Braidotti, Donna Haraway, Karen Barad, Anna Lowenhaupt Tsing (on the more-than-human), and Elizabeth Povinelli (on life/nonlife and geontopower) later led me to Maria Puig de la Bellacasa and links to the ethics of care, Silvia Federici on the commons, and Max Liboiron's anti-colonial feminist methods.

6 Google dictionary entry for 'commons' accessed 14 December 2022.

7 There happens to be a designated space called the 'Commons' in my building on campus. However, one must first pay tuition in order to gain entry and it is definitely not managed by any semblance of a collective of students, faculty, and staff. It is a commons in name only: a 'brand identity strategy'. Designers have a hand in this, and I would argue—a responsibility for its undoing.

8 Charlotte Hess and Elinor Ostrom, 'Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource', *Law and Contemporary Problems*, 66: Winter, 2003, 111–146.

is that they attempt to treat everyone the same and pretend that we must all have the same access. Design practices are especially equipped to acknowledge multiplicity and difference inherent in the commons of the co-called American West.

Fig. 1: Students tracking collared bison in Yellowstone National Park in Fall 2018 Field Studio. Photo: Weston Bradburn, 2018.

Fig. 2: Students collecting bison scat for a citizen science project in Yellowstone National Park in Fall 2018 Field Studio. Photo: Weston Bradburn, 2018.

Land Commons

Approximately thirteen per cent of the land area of the United States is protected in some way by formal designations through local, state, federal, or tribal frameworks.[9] Field Studio currently focuses on lands managed by the Bureau of Land Management (BLM) in the U. S. Department of Interior. The mission of the Bureau is 'to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations'.[10] The mission claims Public Lands are a resource for all, but I question whether these are true commons. The public has an opportunity to provide input in management through formal processes, but partisan politics create chaos every time there is a change in administration.[11]

9 UNEP-WCMC, 'Protected Area Profile for United States of America', *World Database on Protected Areas*, September 2022, www.protectedplanet.net/country/USA.

10 Bureau of Land Management, *United States Department of Interior*, Retrieved 1 September 2022, www.blm.gov/about/our-mission.

11 See the ongoing battle over the designation of Bears Ears National Monument. Originally proclaimed by President Obama in 2009, modified by President Trump in 2018, and restored by President Biden in 2021. More details can be found in a timeline summary at 'Timeline of Tribal Engagement to Protect Bears Ears', *Bears Ears Coalition*, www.bearsearscoalition.org/timeline/.

Furthermore, federal agencies have a long way to go in terms of true collaborative management with Indigenous Tribes. BLM lands in the western United States can be read as a mapping of primitive accumulation enclosing Indigenous Lands through colonial expansion. The Department of Interior is finally evolving from an agency that manages Indigenous Tribes (Bureau of Indian Affairs) to one that collaborates with Indigenous Tribes for management.[12] An encouraging step in this direction is the appointment of Secretary Deb Haaland as director of the Department of Interior—being the first time in United States' history that an Indigenous woman holds this position.[13] My hope is that 'collaborative management' becomes a 'symbiotic agreement', as Isabelle Stengers would describe it—'an event, the production of new, immanent modes of existence, and not the recognition of a more powerful interest before which divergent particular interests would have to bow down'.[14] Significant efforts were made in the Department of Interior in 2022 to strengthen and empower Tribal communities. However, perhaps in a true decolonial framework, this isn't enough—perhaps 'land back' also means 'management back', to invoke Eve Tuck and K. Wayne Yang's ethic of incommensurability.[15] Design practice that moves towards the logic and tactics of the commons must take extra care in applying anti-colonial methods since, as scholar Max Liboiron elaborates, 'colonialism is not one kind of thing with one set of techniques that

12 'First-Ever Secretary's Tribal Advisory Committee Convenes', *U.S. Department of Interior*, 2022, accessed 20 September 2022, www.doi.gov/pressreleases/first-ever-secretarys-tribal-advisory-committee-convenes.

13 'Secretary Deb Haaland made history when she became the first Native American to serve as a cabinet secretary. She is a member of the Pueblo of Laguna and a 35th generation New Mexican.', 'Meet the Secretary', *Department of Interior,* accessed 10 December 2022, www.doi.gov/secretary-deb-haaland.

14 Isabelle Stengers, *Cosmopolitics I*, University of Minnesota Press, 2010.

15 'To fully enact an ethic of incommensurability means relinquishing settler futurity, abandoning the hope that settlers may one day be commensurable to Native peoples. It means removing the asterisks, periods, commas, apostrophes, the whereas's, buts, and conditional clauses that punctuate decolonization and underwrite settler innocence. The Native futures, the lives to be lived once the settler nation is gone—these are the unwritten possibilities made possible by an ethic of incommensurability'. Eve Tuck and K. Wayne Yang, 'Decolonization is not a metaphor', *Decolonization: Indigeneity, Education & Society*, 1:1, 2012.

always align with capitalism'.[16] De-coupling design practices from capitalism is not guaranteed to produce the anti-colonial outcomes we might hope for without explicit action in this regard.

Design Commons

For the last ten years I have focused my design practice on teaching and establishing the Division of Multi-Disciplinary Design at the University of Utah.[17] While I am trained as an architect and practice printmaking in my design research, I operate in the realm of product design in much of my thinking about design process through pedagogy. In refining a curriculum towards multiple facets of product—physical, digital, service, speculative, etc.—I read the dominant 'history' of contemporary product design in the United States and Europe as a discipline developed through capitalist expansion. By product design, I mean product design proper: the market-facing practice of product design that grows out of the commodification of our lives and material human culture, not to mention more-than-human worlds we are part of that also sustain us.

Entrepreneurship and innovation are tools and methods for maintaining and expanding capitalism. I agree that designers should leverage their perspectives and skills for more than mere styling and shaping, in order to lead and frame opportunities in research, development, and design—but not only in service to the market. As problem solvers, design disciplines mediate our lives and transform reproduction into commodities to be sold, claiming the superiority of development and progress. This primarily serves to perpetuate capitalist destruction and does little to address the systemic social and environmental crises that threaten our collective futurity. In my view, design grows out of—and is complicit in—capitalist hegemony that has/is destroying worlds. Positioning designers as leaders in capitalist terms only serves to erase the real damage it inflicts as a discipline and continues to perpetuate the enclosures and commodification that threaten life and reproduction in more-than-human worlds on our planet (and beyond).

16 Max Liboiron, *Pollution is Colonialism*, Duke University Press, 2021.

17 Division of Multi-disciplinary Design, College of Architecture and Planning, University of Utah, design.utah.edu.

In direct opposition to this capitalist drive, design has the power to shape the commons through research and practice. Field Studio creates a model for this opposition specifically through commoning Public Land management and stewardship, and more broadly by centring a commons approach in our practice of design. Field Studio is a collective platform engaging community with designers, faculty, and students. It operates both in formal academic structures and beyond, through community-based design/research collaborations. Field Studio is changing the way designers position themselves in relation to partners and in service to the community by framing relationship and collaboration as the space of commons tactics. It rejects 'human-centred' design, which limits the commons to human benefit and enforces harmful human/nonhuman and life/nonlife dualisms.[18] In the Field Studio, care and reproduction are further defined as stewardship of the more-than-human.[19] Over ninety undergraduate students have participated in the studio through physical, digital, experience, and speculative product design. A community-based research (CBR) paradigm serves not only to scaffold methods, but also to guide relationships and interactions between academic bodies and community members.

The Field Studio began with a focus on Public Lands through a design practice aimed at product outcomes in management and stewardship at multiple scales. Examples include how the BLM might manage the public use of off-road vehicles and their impact, or how monument infrastructure can educate the public on visiting with respect,[20] specifically with consideration for Indigenous communities. This has evolved in our work as we travelled from the first national park in the United States (Yellowstone) to the most recent national monument (Bears Ears) and shifted our research prompts. During the Fall 2022 semester, the studio researched a broader topic of commons: instead of looking at

18 For more on posthuman design see Laura Forlano, 'Posthumanism and Design', *She Ji*: *The Journal of Design, Economics, and Innovation*, Special Issue on Transforming Design Matters, 2017.

19 María Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More Than Human Worlds*, University of Minnesota Press, 2017.

20 The Bears Ears Partnership has developed the Visit With Respect (VWR) campaign for educating the public and minimizing visitor impact to the region. The campaign currently includes nineteen best practices for visiting Bears Ears. 'Visit with Respect', *Bears Ears Partnership*, 2023, www.bearsearspartnership.org/visit-with-respect.

common management and stewardship in Public Lands, the studio derived opportunities for design from scholarship, history, and tactics of the commons. Furthermore, the studio required that all design outcomes be crafted through a commons logic; this drastically limited and complicated the products of design, but also generated creative alternatives otherwise unimagined. For example, a typical student brief might explore individual sleep hygiene; instead, during this studio session the question focused on what becomes possible when the intervention for good sleep is designed on a collective scale requiring a commons logic;[21] or, on how we can frame design opportunities through an understanding of commons resources and tactics. These types of questions extend the typical design framework beyond problem/need and market product/solution.

By inviting designers in the studio to identify a common resource related to their own personal interest—sleep, healthy food, student plotting access, queer sexual enlightenment, urban foraging, back country skiing, etc.—and setting the parameter that interventions would function as a collective affect, we find alternatives to the traditional relationship between capitalism and design practice.[22] What if we committed to design practices and pedagogies that didn't maintain the logics of capitalist markets? What if 'product' means more than product 'to sell'? What if 'product' had some kind of relation to 'common resource'? While these questions begin to unravel the link between design and capitalism, we must also maintain anti-colonial methods to ensure commons tactics don't enact colonial relations that produce value for colonial and settler goals.[23]

Whether designing for—or through—the commons, several values in our practice of design have emerged. These principles expand on community engaged scholarship or CBR and combine design process, critical making, and perspectives shared with relational design, pluriversal design, posthuman design, and Indigenous paradigms. What if commoning methods could unify these various epistemological approaches to design? Perhaps what underlies any design turn's critique of symptoms of colonial capitalism and the

21 This example is drawn from the project 'Happy Sleep' by Mike Rock (B.S. Design 2023) presented in the Fall 2022 Field Studio.

22 Project outcomes can be found at Design Field Studio, Division of Multidisciplinary Design, University of Utah, at www.designfield.studio.

23 Max Liboiron, *Pollution is Colonialism*, Duke University Press, 2021.

advantage to practicing design through a commons lens is the attention to a root cause: commodification facilitated by design(ers)?

In an attempt to achieve some of these desires, and emerging from our collective design practice, the Field Studio highlights the following priorities:

I. Relationship and Reciprocity

The studio begins with relationships. The first phase in our process is establishing relations with partners but also—through mapping our individual relations—with the worlds (past and present) and communities (more-than-human) in which we might work or collaborate.[24] Field work becomes a critical design tool for building relations in intimate proximity on the ground.

2. Pluriversal Worlds

Following Arturo Escobar and others as they are inspired by the Zapatista movement, we adopt a design ontology in which 'many worlds fit'—a 'pluriverse' beyond what John Law calls the One-World World.[25] Fitting many worlds does not require they become flattened to include everyone all the time; commons can be governed by a multiplicity of simultaneous strategies.

3. Critical Framing for the Anti-Product Designer

There is a certain cognitive dissonance that arises when training students to design products in a world that so desperately needs

24 While I was raised with a personal/cultural attention to familial and ancestral relations that are integral to how I experience the world, I was certainly trained to think there was no room for this understanding in professional spaces or academia. I am grateful to many Indigenous communities and scholars demanding space for, and sharing their knowledge in, anti-colonial ways of thinking. For more on relations and reciprocity see Robin Wall Kimmerer on gift economies, such as in 'Returning the Gift', *Minding Nature*, 7:2, 2014, 18–24; Margaret Kovach, *Indigenous Methodologies: Characteristics, conversations, and contexts,* University of Toronto press, 2021; Linda Tuhiwai Smith, *Decolonizing Methodologies*, Zed Books, 2012. Eve Tuck and Wayne Yang (eds.), *Indigenous and Decolonizing Studies in Education*, Routledge, 2019; and Shawn Wilson, *Research is Ceremony: Indigenous Research Methods*, Fernwood Publishing, 2020.

25 See Arturo Escobar, *Designs for the Pluriverse*, Duke University Press 2018 and John Law, 'What's wrong with a one-world world?' *Distinktion: Journal of Social Theory*, 16:1, 2015, 126–139, www.doi.org/10.1080/1600910X.2015.1020066.

to be spared any additional junk. Early on in the development of our curriculum, we developed a goal to prepare product designers with a certain reluctance for the products of design. This requires a commitment to critical framing for design opportunity with true freedom to take risks and embrace the unknowns (or lack of answers) within the studio.

4. Positionality

We can never be outside of or separate from the context in which we generate products of design. There is no neutral, absolute, universal, normative position of truth or authority. Designers must know their own intersectional position from which they will intervene in the world(s) around them and act accordingly with anti-colonial, feminist, queer, anti-racist ethics.

5. Posthuman

The emergence of the studio in the context of Public Lands brings the human/nonhuman and culture/nature dualisms inherent in design to the immediate surface. What becomes possible when we expand our priorities and awareness to include the more-than-human?

Studio Commons

Field Studio collaborates with community and state partners working in relation to the Bears Ears National Monument (BENM) and other Public Lands in the western United States. Bears Ears National Monument protects 5,500 km^2 of land through multiple management agencies and collaboration. The BLM and the United States Forest Service collaborate with the Bears Ears Inter-tribal Coalition made of representatives from five sovereign Indigenous Nations—Ute, Dine, Ute Mountain Ute, Hopi, and Zuni. In addition to these governing authorities, many non-profit and non-governmental organizations, academic and research institutions, and community or private research groups all contribute to the management and stewardship of the Monument. Noting the limitations of Public Land designations as true commons, in the context of Bears Ears many divergent groups collaborate in the co-management of common

resources for multiple objectives, including but not limited to care and reproduction of local human and nonhuman communities, sacred ceremony and cultural practices, recreation, industry, agriculture, education, and research.

I will share three examples of our ongoing work with the Bears Ears Partnership (BEP) and the Bears Ears National Monument to design for 'Visiting With Respect'. The BEP is a non-profit based in San Juan County, Utah, focused on cultural site conservation, tribal partnership, education, and advocacy in the Bears Ears region.

Fig. 3: Field Studio group photo in front of the Bears Ears Education Center in Bluff, Utah. Photo: Elpitha Tsoutsounakis, Spring 2019.

Design Process

Field Studio supports management and stewardship of the Bears Ears common through design service to our partners while also exploring research topics their staff may not have the bandwidth or expertise to address. We have tailored our design process to the working relationship with partners as we develop projects through collaboration at every phase. I will briefly outline our methods in practice.

1. How to Begin?

Prior to any semester, I invite partners to identify a need or question they wish to explore through collaboration with the studio. Once we establish a topic or brief, we present it to the student designers who in turn further investigate the topic and have multiple conversations with our partners to understand their perspectives and context. During this phase we build relationships between partners and students in person though field visits to BENM and the town of Bluff and then continue work long distance, online. Designers translate these experiences and interactions into opportunities for design and reflect these findings back to the partners.

2. Staying on Track

To ensure the collaboration serves authentic needs and desires of the community, designers present research, framing, and opportunity identification to our partners before any proper design activities begin. Subsequent design concepts and development are presented at key points for feedback to make sure the project outcomes align with partner objectives. At each of the presentations and discussions, partners are welcome to invite their respective teams and stakeholders to contribute to the discussion. These sessions occur online to allow for participants to join from various locations in the State and are recorded so that partners can refer to them and share for internal discussion. Further engagement of the broader community in this process is critical, but also dependent on funding. In past semesters, when funding was available, students travelled throughout Yellowstone National Park or Bears Ears National Monument to interact with visitors and attended community gatherings in Bluff where they were able to get public feedback on their proposals.

3. The Final 'Product'

The students finalize their work two weeks prior to the end of the semester for presentations to partners and then spend the remaining weeks refining PDF reports that summarize the entire process and body of work. While serving as a critical assessment and reflection phase for the designer, these reports ensure community partners have access to the knowledge created though the design product and give them a resource for their own work. These reports are

also posted on the Design Field Studio website as an open-source archive. At various points in our working relationship, partners identify projects they would like to implement beyond the classroom. I assemble teams with student research assistants to further develop and implement these outcomes with the community. We support partner grant applications for funding and develop ways to leverage academic resources in service to the community through design. I will describe three examples of how our design activity has influenced the management of the Bears Ears commons.

Case Study 1: Alternative Products of Design

In the spring of 2021, students in the Field Studio focused on a particular site within BENM. Through her research, Rikki Price (BS Design 2022) became interested in the messages visitors receive from built infrastructure and identified the opportunity to develop visitors' understanding of the Indigenous context more deeply. Through her research, she crafted a proposal to include the Tribal seals of the five Tribes in the Bears Ears Inter-Tribal Coalition on signage throughout the monument. Our BENM partners were very receptive to her proposal and continued its implementation with their Tribal partners. Price's work provided a tool for their process. In the summer of 2022, BENM celebrated the first official monument signs that include the five Tribal seals. In this case, the value of the designer's contribution is not the final design of the product itself. Instead, the design practice becomes a tool for establishing mutual objectives, mediating compromise, and building collective capacity. Through our model of collaboration, we are able to leverage specific points of the design process in service to our partner's goals and desires.

Case Study 2: Creating Design Collectives with Community Partners

The Greater Bears Ears Partnership is based in Bluff, Utah where it manages the Bears Ears Education Center (BEEC). The BEEC is not a formal monument visitor centre but instead was initiated as a

stop gap for the influx of visitation that began when the campaign for designation increased awareness of the region. As management agencies, including the Inter-Tribal Coalition, move towards a formal visitor centre, the BEEC is adapting to become a resource in the local community, specifically in the development of an outdoor classroom to serve local schools and communities.

Field Studio is currently working with the Bears Ears Partnership to implement several exhibits and furnishings at the BEEC, some of which will also be implemented in the Monument—tying together visitor experience throughout the region to promote 'visiting with respect' in this unique cultural and ecological landscape. The team for the BEEC exhibits includes staff from the Bears Ears Partnership, myself, and students, as well as scholars and community experts in palaeontology, geology, and education from multiple academic and community institutions. Field Studio has expanded capacity in the Bears Ears Partnership to develop the content and narrative of the exhibits in addition to providing design, fabrication, and installation services.

Fig. 4: Rendering of signage proposal by Rikki Price (BS Design 2022), Spring 2021 Field Studio.

Fig. 5: New BENM sign featuring the five Tribal seals. Photo: Bureau of Land Management, 2022.

Case Study 3: Collaborations and Prototypes for Design Outcomes

Earlier this fall, the students worked in teams to generate concepts for tables and seating in the outdoor classroom with a unique objective to design furnishings as artefacts of communication and education. In a previous semester, EJ Spence (BS Design 2022) proposed a concept to implement Visit With Respect messaging on tables in the monument extending available surfaces for outreach without introducing new infrastructure. The teams further developed Spence's concept generating six design proposals for the GBE Partnership to consider. One of the teams designed a system for engaging the local practice of collecting dead-fall trees in the landscape for use as firewood by local communities. The opportunity to use this raw material in the tables amplifies another educational theme through their use and meaning as objects, while the application allows the wood to be incorporated back into the cycle for burning when no longer in use in the furnishings. Field Studio is generating new relationships for connecting community and integrating academic scholars and research on the topic of firewood collection, while also exploring innovative design solutions in terms of experience and material uses. A similar model is already successful at James Madison University where Assistant Professor Nick Brinen is coordinating partnerships between his undergraduate

architecture studio and Virginia Department of Forestry to make use of non-traditional material streams in design-build projects.[26] These partnerships provide alternatives to the 'academic scholarship to market enterprise' pipeline currently promoted and facilitated by design practice and pedagogy.

Fig. 6: 'Changing Biomes' paleontology exhibit at the Bears Ears Education center in Bluff, Utah. Photo: Elpitha Tsoutsounakis, 2023.

Outcomes

Field Studio operates on several foundational principles that are key to its successful commoning of design collaboration. These include an emphasis on relationship and reciprocity with partners, student/designer positionality and values, and recognition that the commons is not universal. Above all, it denies the obligation of the designer to produce any products at all. Design students are empowered by working with community members to address real issues and by contributing their design expertise in service to the community. Partners benefit from innovative design perspectives that centre commons frameworks, as well as the contribution of

26 Brinen and his students designed and built a bike shed with wood that was milled from Harrisonburg urban ash trees that were killed by the invasive emerald ash borer (EAB). See 'The Bike Shack', *Virginia Department of Forestry*, 2022, accessed 4 May 2023, www.dof.virginia.gov/the-bike-shack/.

creative scholarship, in critical topics they typically don't have bandwidth to explore.

Fig. 7: Installing new exhibits at the Bears Ears Education Center in Bluff, Utah. Photo: Pavlos Tsoutsounakis, 2023.

Fig. 8: Table concept rendering by Morgan Doane (BS Design 2024), Fall 2022.

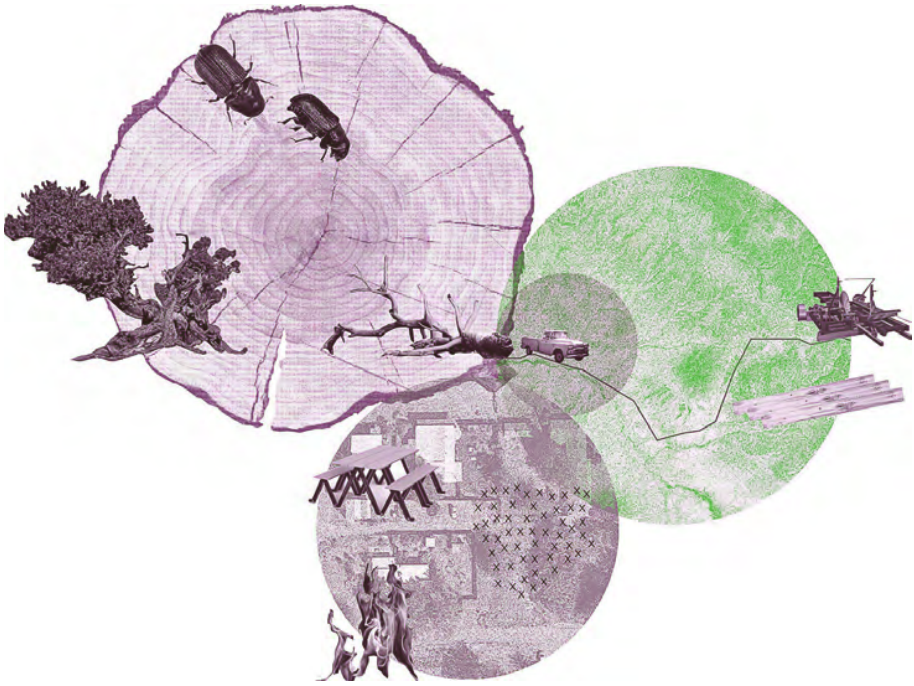

Fig. 9: Alternative material stream diagram by Finn Reddish (BS Design 2024), Fall 2022.

In the studio we are always mindful of our relationship and responsibility to communities, and this educational experience provides students with direct engagement in the world that affects their design ethic and values. It became immediately obvious that a group of predominantly white, settler design students cannot operate in the typical design school model in the entanglements of the rural Bears Ears Region. We have adopted this emphasis on positionality as a key step in project framing, regardless of the context we're working in, as an active way to develop design ethic and awareness. I still struggle with colonial notions of partnership and 'mutual benefit' in community engaged models, especially in the context of Bears Ears. Initially, I was motivated by a desire to have a positive impact through collaborations with Indigenous partners, but quickly realized, and continue to learn in real time, what conflict and limits there are to my involvement in these spaces. To return to Liboiron's notions of infrastructure and compromise, I might frame the Field Studio—today at least—as an attempt to work within the infrastructure of land designations in the United States

through design, while also finding ways to navigate the compromises inherent in our partner relations.

The ongoing shift in Field Studio formation and methods balances outcomes at each phase with the primary objective to realize an alternative design practice and pedagogy. The most significant divergence from typical design education that I value in the studio is the true freedom to take risk and the reluctance to design another product for the sake of itself. This often results from—while also promotes—student awareness of experience and systems beyond the literal artefact. Field Studio positions the product of design as much more than the object (digital or physical), to include research, development, relationship, expansion of capacity, and collaboration—all based on anti-colonial and commoning strategies. The project outcomes and partnerships developed through Field Studio over the past five years begin to model the changing role of designers and expanded methods of collaboration in the commons. Designers must position themselves outside of capitalist frameworks for shaping current worlds and affecting our collective futurity with all of its incommensurable entanglements.

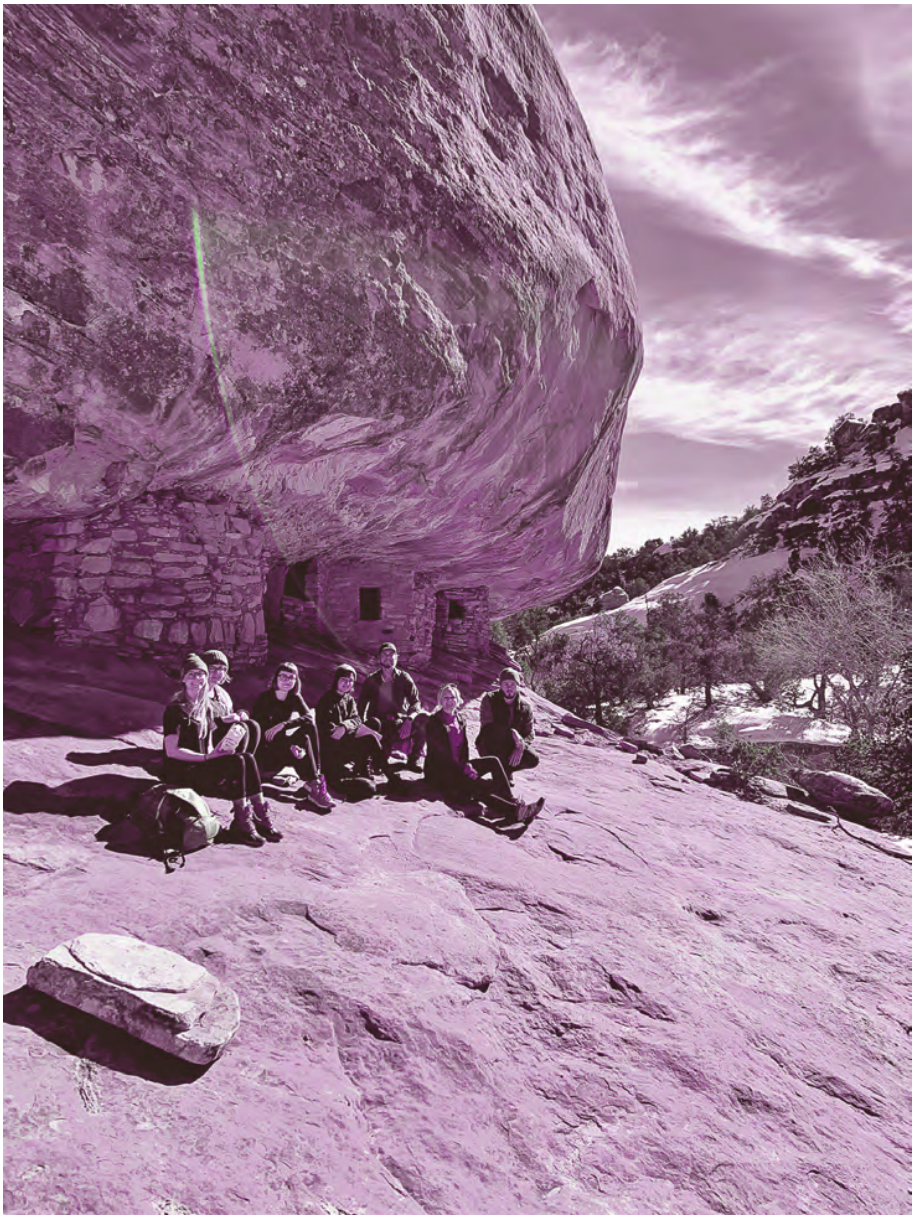

Fig. 10: Field Studio hiking in Bears Ears National Monument. Photo: Elpitha Tsoutsounakis, Spring 2019.

Workshop Matters: How Can Access to Co-Workshop Spaces Change a Designer's Practice?

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'we should not give up on the workshop as a social space. Workshops present and past have glued people together through work rituals [...] through face-to-face sharing of information.'[1]

Where We Work is How We Work

Design has often been criticized as being complicit in the linear design-produce-waste model and thus as systematically contributing to meaningless overproduction and overconsumption. Practitioners and theorists alike (from Ken Garland, to Victor Papanek, to Peter Sloterdijk) critically address design's role in cultivating a consumer's search for new-looking goods and in fostering their expectations and appreciation for an object's disposability rather than its function or longevity. In line with this, Richard Sennett refers to the behaviour pattern of an average mass-consumer as being more aroused by anticipation than by operation.[2] Efficiency and productivity have become the most valuable assets in the golden age of capitalism, and we can no longer ignore the fact that design is a massive contributor to and benefactor of our times of environmental crisis.[3] Even if there have been recent trends towards rethinking our non-sustainable culture,[4] we as society are still far from shifting towards conscious production models, currently at the hands of international corporations and governmental legislation. Furthermore, global outsourcing of production has created a gap between designers, manufacturers, and consumers.[5] We, designers, face a moral responsibility in choosing how our practice contributes to the current environmental crisis. Being physically detached from manufacturing processes, the majority of us do not have an embodied awareness of the production cycles behind our work; mechanized mass production results in a certain deskilling of the designer.[6]

1 Richard Sennett, *The Craftsman*, Yale University Press, 2008, 73.
2 Ibid, 110.
3 Jan Boelen, Nadine Botha, and Vera Sacchetti (eds.), *Design as Learning: A School of Schools Reader, Curatorial Essay*, Valiz, 2019, 48.
4 Such as the European Union ban on single-use plastic products.
5 Kate Franklin and Caroline Till, *Radical Matter: Rethinking Materials for a Sustainable Future,* Thames & Hudson, 2019, 110.
6 Ibid, 111.

If we look at our workspaces as 'stages' upon which design practice unfolds—what type of physical environment and 'affordances' does a holistic approach require?[7] Can we, designers, be proactive participants in a post-industrial shift in the relationship between design and production? And if so—how and where can this happen?

There is an intrinsic connection between the physical environment of where we work and our design approaches, methodologies, and outcomes. Anthropologist Tim Ingold argues that creativity emerges from within an ongoing, improvisational process between makers, materials, and other non-humxn things such as tools and the physical environment.[8] I consider myself as fortunate for having worked, after my architecture studies, in a team that shared a carpentry workshop and a few digital fabrication machines. We often worked on the small-scale, being strongly referential to local context projects in which the outcome is a result of an interplay between thinking and making. Since then, I developed an appreciation for the co-workshop as a workspace that allowed me to practice with a holistic design approach. I have experienced how my process changes fundamentally when situated in a place with access to saws, drillers, sanding machines, hand tools, 3D printers, laser cutters, or Arduino gadgets. But more than a spatial entity with access to infrastructure, our shared workshop was a social one—a place for serendipitous collaborations with designers, makers, or architects and a place of knowledge exchange and social interaction. The belief that I am not an isolated case, and that there are more designers with similar understanding and needs, is what sparked my main questions: What is the role of co-workshops for contemporary design practice?[9] In what way can co-workshops embody principles of commoning? And how does this reposition the designer's role in a production process?

7 I borrow psychologist James J. Gibson's term *affordance*—the specific arrangement of objects in the environment which define and allow for particular actions to be performed, or what the environment offers to the animal or, in this case—the humxn to practice design. James J. Gibson, *The Theory of Affordances, The Ecological Approach to Visual Perception*, Houghton Mifflin, 1979.

8 Tim Ingold, *Making: Archaeology, Anthropology, Art and Architecture*, Routledge, 2013, *Preface*, p. xi.

9 I use the term co-workshop to mean a shared space with digital fabrication, traditional craft machines, or including both as complementary (beyond the digital-analogue dichotomy).

From Craftsmxn to Co-Workshop

For centuries during mediaeval times, the workshop was a place for transmitting the master's craft secrets down to future generations. Designing, producing, and crafting were entangled in a singular act and could not have been distinguished as separate operations. With the division between art and craft in the Renaissance, the mediaeval workshop slowly dissolved. During the Industrial Revolution, mass production became the norm, and the craftsmxn as the primary producer withdrew. This shifted in the relationship between designing, producing, and consuming: the ultimate goal of design became the marketplace, nourishing the soil for our current consumer societies to blossom.[10] In the context of Western economies, design became a setting for a replicated Fordist production line, in which designers create the aesthetics of stencils, which factory workers and machines replicate in thousands of copies.[11] In a way, design became a servant of industry and economy, with decision making based on profit-oriented, rather than process- or outcome-oriented, goals. The workshop slowly began to vanish from the urban fabric and cities were overtaken by factories. The Arts & Crafts Movement made a romanticized attempt to return small-scale workshops in opposition to mass manufacturing, yet the model of individual craftsmxn space, serving the needs of the upper class, was outdated already back then and irrelevant to the new industrial era. In 1919, in the Bauhaus Manifesto, Walter Gropius proclaimed that the workshop would absorb the school, implying that only by the act of making can one holistically learn design.[12] In the upcoming years, the workshop became an inherent part of most Western design education. However, Gropius' bold statement was declared at the rise of mass production when design was still to become a substantial part of the global environmental crisis we are currently experiencing. After World War II, the capitalist production line endorsed designs that looked modern and futuristic but in terms of function rarely provided new or better solutions. Planned obsolescence became a major part of the approach towards new design products.[13]

10 After his visit to 'The Great Exhibition' in 1851, German architect Gottfried Semper writes: 'the process that our industries and the whole of art will inevitably follow is clear: Everything will be designed for and tailored to the marketplace'. Gottfried Semper, *Science, Industry, and Art*, Cambridge University Press, 1989, 141.

11 Ruben Pater, *CAPS LOCK*, Valiz, 2021, 248.

12 Walter Gropius, *Bauhaus Manifest*, Bauhaus, 1919.

This post-Fordist way of designing is what gives solid ground for cultural theorist Peter Sloterdijk to ironically address designers as 'charlatan-outfitters' who support the habituation of the masses.[14]

Such practice has situated designers in studios, offices, and since the turn of the millennium, in co-work spaces, aiming for a shared economy model for utilizing space as a resource. However, by providing access to desks, Internet, meeting rooms, and sometimes ping-pong tables, they do not create an environment for working with materials, tools, and haptic experimentation.

Parallel to this, with a much slower pace, grassroots-initiated co-workshops have been emerging simultaneously but independently in many countries.[15] The first FabLab opened in 2002 in India[16] and allowed for local designers, engineers, and students to design and build solutions for local agricultural problems and create watering infrastructure improving vegetation. When looking back at the process, FabLab leader Dr. Shrinath Kalbag points out that the designers had survival on their minds more than profit.[17] FabLabs, makerspaces, and community workshops have become places of intersection between DIY, custom design, prototyping, and passion for making. Yet they are often seen as hobby hubs and are marginalized in professional design practice. At the same time, they allow 'amateurs'[18] to build, make, or repair their own goods rather than buy mass-produced (and often not fairtrade) objects, thus paradoxically practicing design in more holistic and circular ways than many professional designers do. In this way, shared workshop spaces become stages for an alternative production line and cultivate a type of non-consumer behaviour.

13 Marjanne van Helvert (ed.), *The Responsible Object: A History of Design Ideology for the Future,* Valiz, 2017, 108.

14 Michael Renner, *NESHAN: The Iranian Graphic Design Magazine*, Teheran, 40, 2017, www.neshanmagazine.com/Article.aspx?l=2&Id=326.

15 For some databases on shared workshops see: www.openworkshopnetwork.com, www.fablabs.io/labs, www.makethings.ch, and www.preciousplastic.com.

16 The first FabLab emerged as a continuation of a course at MIT, called 'Learn to Make (almost) Anything'. It opened as a collaboration project between MIT and Vigyan Ashram near Mumbai, India. Massimo Menichinelli, *Fab Lab: Revolution Field Manual*, Niggli Verlag, 2017, 22.

17 Menichinelli, *Fab Lab*, 53.

18 Let's remind ourselves here that 'amateur' is of French origin and originally denoted 'a lover of art', implying passion as a driving force for action; to an extent this often is a key factor in quality design outcomes. I put this here as an attempt to blur the line between professional and amateur design practitioner.

The workshop as a spatial entity has undergone a long transformational path from a space for craft production to a collective space, embodying principles of commoning such as sharing, community, and inclusivity.

Co-Workshop Scenario Manual[19]

Design it Yourself, Design it Together

I want to share the story of Katharina, a medical doctor by profession and practice, but also an 'amateur' sewer, pottery maker, and silkscreen printer. Her passion for craft and regular visits to a shared workshop space[20] evolved into initiating a silkscreen atelier as an addition to the existing woodwork, ceramics, and digital fabrication spaces in a co-workshop in her city. She now regularly gives courses there and experiments with natural dyed colours for silk screen printing. At the same time, she meets and exchanges design knowledge with other workshop members with versatile skills and backgrounds, including architects and designers, but also teachers, dog-walkers, kids, and retirees. Designing-through-making becomes an inclusive discipline where anyone can be an active participant. Daniel Charny underlines the importance of making as a communal effort, allowing people to be part of a solution instead of a problem.[21] Another valuable aspect of a do-it-yourself movement emerged from interviewing members of co-workshops. For instance, co-workshop founder Tobbias pointed out how making a table—having to think of what wood to use, how much to use, and where to get it from—creates an understanding of the complexity of a process behind an object. He elaborates: 'Then when you see a table in the market which is cheap, you are aware that it can't have been produced fairly'. Making an object yourself cultivates an educated-by-making type of consumer behaviour—a hobby evolves into responsible use.

19 The stories and examples written here are real-life examples, some of which I encounter in my design practice, others are a result of six months of fieldwork, visits, and interviews in shared workshop spaces in Switzerland while conducting my MA thesis at The Basel School of Design in 2022.

20 Macherschaft, Basel, www.macherschaft.ch.

21 Daniel Charny, *Radical Matter: Rethinking Materials for a Sustainable Future*, Thames & Hudson, 2019, 114; Pomarico refers to the benefits of living together, but the same can be said for sharing not only habitats but also physical work environments.

Designers Think-Through-Making or the Power of the Prototype

Tim Ingold criticizes the Western understanding of making as bringing together a preconceived, ideal form that initially existed in the maker's mind. In working with materials, the process is never linear—thinking first, making second; instead, making and thinking happen in alternation or, as designer Hella Jongerius has described it, as ping-pong between your hands and your mind.[22] Ingold recognizes making as an inherently mindful activity in which the forms of things are ever-emergent from the correspondence of sensory awareness and material flows.[23] Co-workshops provide access for small design studios, collectives, start-ups, or product designers to prototype independently and detach themselves from corporate product development. An example of such a scenario is the story of Petar who after a few years of prototyping in a co-workshop developed a foldable multi-use bottle, which in 2022 won the German sustainability award.[24] Having access to an economically affordable environment and social climate of similar values can allow for similar scenarios to develop.

Designers Unlearn, Non-Designers Learn[25]

American futurist writer Alvin Toffler stated that the illiterate of the twenty-first century will not be those who cannot read and write but those who cannot learn, unlearn, and relearn.[26] If we want to be literate design practitioners, where can we unlearn and relearn after or without formal education? Web platforms such as 'domestika.org', 'skillshare.com', and 'instructables.com', as well as open-source platforms, provide learning material on how to create a wide range of objects—from chairs to an Arduino robotic arm controlled by a touch interface.[27] Anyone who is eager to learn

22 'Lexicon of Design Research', Design Academy Eindhoven, www.lexiconofdesignresearch.com/lexicon/texts/thinking_through_making.

23 Tim Ingold, *Making: Archaeology, Anthropology, Art and Architecture*, Routledge, 2013, 7.

24 See www.difold.com.

25 Here, I use Jeff Howe and Joi Ito's definition of learning as being different from education, the former depending on the individual's responsibility and curiosity to continuously gain and apply new knowledge, hence something one does, the latter being something which is done to one. Joi Ito and Jeff Howe, *Whiplash: How To Survive Our Faster Future*, Hachette Group Book, 2016, 32.

26 Alvin Toffler, *Future Shock*, Bantam Book, 1971, 211.

27 Maurizio Miscio, www.instructables.com.

can work with electronics, metal, wood, textile, or digital fabrication, as long as they have access to an actual physical space and tools. Shared workshops adopt the function of alternative design learning environments. On a more professional level, contemporary design fields such as practice-led or new material research require infrastructure, where such approaches can be practiced in an independent setting. From mango and pineapple vegan leather through humxn hair used as material,[28] access to tools and machines gives a starting point for designers to experiment, create on a local level, and do so independently of industry, which often turns such projects into a luxurious manifestation of sustainability as nothing more than a trend.

Designer-Makers or Mass Production Shakers

Co-workshops allow for designers to closely engage with the production process and allow for closing the gap between designing and producing. A fine example is the story of Martin and Michael who invented the 'halfbike'[29] and, after a successful crowdfunding campaign, produced all the halfbikes in a co-workshop. Two years later, a third version of their design won the 'Red Dot Design Award' for Mobility. What I find beautiful in their story is that they began as amateurs and passionate cyclists. The first prototypes resonate much more with a do-it-yourself image rather than implying a design award recognition. Another moral of this scenario is that just as many halfbikes are produced as are used. Crowdfunding gives transparency of demand, and in doing so redefines the relationship between designer and consumer. In combination with similar economic models, shared workshops could be the spatial typology as an ingredient for an alternative design-production recipe.

Designers go Circular

Designers are essential actors in the process of ending today's linear economy, in which eighty per cent of all materials are wasted.[30]

28 Design research studio swine uses cut hair, or waste from the beauty industry, as material for producing objects. See www.studioswine.com/work/hair-highway/.

29 See their brief story: www.youtube.com/watch?v=PHzlIMa8reQ&ab_channel=Halfbike.

30 Marcus Fairs, 'Ellen MacArthur's Circula Design Programme Seeks 20 Million Designers to Transform Global Economy', *Dezeen*, 6 August 2019, www.dezeen.com/2019/08/06/ellen-macarthur-foundation-circular-design-programme/.

Design for mass production often indirectly results in the inefficient and unnecessary overuse of materials and energy. With diverse access to tools, co-workshops allow designers to experiment locally and to explore circular practices, which potentially can be scaled up in a bigger production cycle and thereby contribute to decreasing the industrial environmental impact of design.

As a last example, I share the practice of Precious Plastic, who are highly specialized in plastic recycling and upcycling. Their story begins as a university project for affordable, do-it-yourself plastic recycling machines; for ten years they spread globally and became a grassroots network of spaces for circular designing and producing. Just recently, a Precious Plastic hub in Switzerland began a collaboration with a co-workshop in Zurich,[31] which I perceive as empirical evidence of an expanding community of design practitioners sharing similar values and gravitating around principles of degrowth.

The Co-workshop as Urban Commons

Within the European context, the shared workshop has begun to shape a yet to be recognized typology of its own right, disrupting the conventional relationship between design and production, allowing for alternative models and scenarios for designers to occur. A co-workshop provides an environment that can foster empathy and social cohesion and accelerate opportunities to learn from each other; it can nurture new collaborative practices for producing and prototyping. These spaces allow for small scale production and nurture the inherent relationship between designing and making. Furthermore, they address the current urgency for new materials, upcycling and recycling approaches to design, thereby encouraging new creative strategies for local production as well as broadening our understanding of who a designer is and making the field more inclusive. A design practice situated in a co-workshop will not necessarily be the most efficient but it might generate better—instead of faster—solutions, prioritize environmental and social values rather than financial profit, and focus on qualities of design attitude rather than quantities of trendy outcomes. Such an approach expresses

31 See www.dynamo.ch and www.preciousplastic.ch.

itself as commoning, as a process rather than a static entity, which creates new ways of living and acting together[32]; its essence being in the relationship between the community (designers and makers) and the environment (space, tools, and machines)—not driven by state or market but by shared values.[33] Similarly to community gardening, urban farms, or non-institutional cultural spaces, co-workshops belong to the pool of urban commons[34] particularly addressing design practice.

Can we imagine co-workshops becoming an important part of the cultural climate of cities just like museums are? What possible scenarios can emerge if shared workshop spaces begin to play a role in our urban planning strategies? What could this mean for the social, cultural, and economic development of Global South countries?[35] Could co-workshops contribute to shifting the design-production-disposal relationship and be a network of resilient infrastructures that bring production and consumption closer together, or what some scholars refer to as a 'cosmopolitan localism-lifestyle' that is place-based and regional, yet global in its awareness and exchange of information and technology?

The examples presented in this chapter look at possible positive social, environmental, and economic benefits of sharing workshop spaces, without addressing the potential negative scenarios that can develop–such as the lack of monitoring of production, patenting, or moral issues of dealing with open-source fabrication. Yet, acknowledging co-workshops' potential as a working

32 Johannes Euler and Leslie Gauditz, *Commoning: A Different Way of Living and Acting Together*, degrowth.info, 2017, www.degrowth.info/blog/commoning-a-different-way-of-living-and-acting-together.

33 David Harvey, *Rebel Cities: from the Right to the City to the Urban Revolution*, Verso, 2012, 73.

34 Ibid. Mary Dellenbaugh-Losse, Nils-Eyk Zimmermann, and Nicole de Vries, *The Urban Commons Cookbook*, 2020.

35 The 2023 Venice Biennale curator Lessley Lokko addresses the urban future of Africa referring to Sennett's understanding of the workshop as a social entity. She asks for alternative urban planning scenarios, under the theme of 'The Laboratory of the Future', focusing on co-operation, commons, and learning from the mistakes of the economically developed countries in terms of urban planning, industrialization, and their impact on nature and society. In this context, can co-workshops be a setting for alternative production scenarios, challenging the current uneven use and distribution of resources and waste between the Global North and the Global South? See www.labiennale.org/en/architecture/2023/introduction-lesley-lokko.

environment and a shareable resource is an important step that we designers need to consider. We need to embrace the opportunities, just as equally as the challenges, for creativity, diverse social interaction, and co-operation that these spaces provide if we want to witness a post-industrial future with alternative thinking about shared scenarios to design, make, produce, use, and live together.

Errant Design:
Design(ing) Without Solutions—
An Exploration of Associative Principles for an Errant Design Practice

Errantry Media Lab (max stearns & nathalie attallah) and the multitudes of i's and we's contained herein

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is a thoughtful and collaborative designer foraging pathways that critically approach how we design. Currently, she is developing a Biodiversity+ Design Toolkit to promote a shift towards prioritizing biodiversity in design practices.

max stearns
is an artist practicing in the fields of design and poetry. His work explores and experiments with democratic innovations, disruptive pedagogies, and more generally with the fragility of making sense of the world.

I. preface

This is an open-ended labyrinth; an opportunity to become errant. An affordance to wander a little bit rather than efficiently advance to some kind of solution. As such, be mindful of the design decisions we've made—not to prove definitive fact, but instead to afford an alternative attention: to enable the non-obvious, incongruent, and unconstructed possibilities for our design(s)(ing) to emerge rather than be preconceived.

Be sure, as you review and explore the following pages, to proceed with scepticism and a willingness to critique. We offer epistemological anarchy[1]—a brutal collage of citations and facts and knowings, which bend (and may break) academic convention. We do so in order to explore ideas (fragmented and whole) at intersections that may have seemed incommensurable.

Question the individuals we've cited, the validity of their propositions, the contexts in which their making and ideas occurred, as well as the impacts and actions that proceeded them. Similarly, be prepared to think critically and without assumed confidence about our use and engagement with these individuals and their thinking as playful partners in the creation of the associative principles of Errant Design.

A quick note on language... Humanity's languages are designed systems. They are constructions of rules, and grammar, and syntax 'where habits of speech and therefore also habits of thought settle and interact'.[2] The design of language 'shape[s] the ways we relate to each other and to the living worlds. Words are world-makers – and language is one of the great geological forces of the anthropocene'.[3] The design of language foundationally affords the 'ways' and 'whys' by which we think and design. And thus, to afford different avenues for thought, the language of this piece moves with a different rhythm—A rhythm intent to afford alternative possibilities than the ones our current linguistic conventions and rules tend to enable.

Our efforts here are partial. They are incomplete and they are inaccurate. We advance them all the same. For we 'should not

1 Paul Feyerabend, *Against Method*, 4th ed, Verso, 2010.
2 Robert Macfarlane, *Underland: A Deep Time Journey*, W.W. Norton & Company, 2020, 113–114.
3 Ibid.

like [our] writing to spare [you] the trouble of thinking. But if possible, to stimulate [you] to thoughts of [your] own'.[4]

2. consider ~~our~~ positionality

Let us pause and position ourselves. Each of us. Let us reflect on the factors that contribute to our arrival at this point of departure.

we identify as...	☑	☐	☑
and come from...	☑	☐	☑
in order to...	☐	☑	☐

nathalie attallah and max stearns, ~~our~~ positionality #1, 2023

We are **errantry media lab**, a collaboration of nathalie attallah and max stearns.

The perspectives we share are our experiences, our identities, our intersecting and intersectional communities, our imaginations, and more. We come from vast difference and tremendous similarity; counter encounters with dominant paradigms, yet attuned unease and disobedience; Continents apart and collided; A diversity of social and natural studies collaged and enmeshed; And unifying efforts to creatively, attentively, and responsibly affect change.

we know...	☐	☐	☐
we are...	☑	☑	☑

nathalie attallah and max stearns, ~~our~~ positionality #2, 2023

But we are also an infinite i.

More than just our individuality, but rather our becoming-with: our commons. What we share may not be known to be true, but stems from the insights and illusions we've gained along the way in our upbringings, educations, and efforts in creative (and not-so-creative) public, private, and non-profit organizations. We do not fit neatly into categories of academic or private or public practitioners for we have one foot in each, in our own formal and informal ways.

We are designers and designed, creators and created, educators and educated, leaders and the led, and through all this,

4 Ludwig Wittgenstein and G. E. M Anscombe, *Philosophical Investigations*, Macmillan, 1953, 4.

we have become errant.[5] We are the artefacts we design... the systems we create... and the worlds we build... in which we attempt attuned action(s) with the thinking we play in and with.

we believe...	☐	☐	☑
and think with...	☑	☑	☑
to stay committed to...	☐	☑	☐

nathalie attallah & max stearns, ~~our~~ positionality #3, 2023

Our difference and sameness fuel what we (may not) know and what we feel (as true—for us and for others). They fuel our interactions and actions and ambitions for change. And, what we share, and you will encounter in the coming pages, are the connections of ideas, clashes of concepts, deconstruction of constructs, and playful trickiness this practice of errant design entails and enables.

3. what is errant design?

Errant Design is an unbounded practice. Oriented as both a challenge—as well as an alternative to—conventional, solution-oriented fields of design, it wanders. It reflexes, adapts, learns, changes course, instigates scepticism and uncertainty, and, most importantly, enables attentive, thoughtful, and responsible action and making.

It is design process and designs artefacts as assemblages for engaging and addressing wicked problems;[6] Not as silver bullet solutions, but as collages of new conditions and formations for learning, reflecting, adapting, and evolving our web of opportunities to engage the nuances of these very tricky challenges. It is a practice that—rather than seeking resolution—purposefully 'seeks to unleash more and new beginnings' of exploration and possibility.[7]

Errant Design functions at the intersections of three associative principles:

5 Errance, for Glissant, 'while not aimed like an arrow's trajectory, nor circular and repetitive like the nomad's, is not idle roaming, but includes a sense of sacred motivation'. Édouard Glissant and Betsy Wing, *Poetics of Relation*, University of Michigan Press, 1997, 211.

6 Horst W. J. Rittel and Melvin M. Webber, 'Dilemmas in a general theory of planning', *Policy Sciences,* 4:2, 1973, 155–169.

7 Eric Gordon and Gabriel Mugar, *Meaningful Inefficiencies: Civic Design in an Age of Digital Expediency*, Oxford University Press, 2020.

- an ethics of care:
  Errant Design is a mode of care amidst a world of uncertainty. And 'to care is to act not by fixed rule but by affection and regard'.[8] As such, our designing—while tethered to an ethic—'will be varied rather than rule-bound'.[9]
- an in-process temporality:
  Errant Design simultaneously considers:
    - The histories that got us where we are;
    - The present experiences all are having;
    - The future experiences and events all are trying to shape; and
    - The nonlinearity, interwovenness, and perpetuity of all three timelines.

  This requires designers (and all) to have a different orientation to time and temporality.[10] It necessitates a sense of ongoingness[11]—A sustained state of 'staying in-process'.[12]
- a becoming-with:
  Errant Design recognizes we are in perpetual acts of becoming with everything, everywhere, all at once; a sort of constant, relational informing/being informed, learning/teaching, designing/being-designed, and affecting/being-affected. To afford such, Errant Design centres:
    - making-as-thinking;
    - Sensing-uncertainty; and
    - staying-with-complexity.

4. why be errant?

Errant Design is a mode of design(ing) meant to ongoingly engage, unravel, unmake, and (re)design our web of social constructs, imaginaries, and actions therein. It is, in parts: an adaptation of

8 Nel Noddings, *Caring: A Relational Approach to Ethics & Moral Education*, Second edition, University of California Press, 2013.
9 Ibid.
10 Ibid.
11 RSD11 | University of Brighton, 'Confronting Legacies of Oppression in Systemic Design'.
12 Macfarlane, *Underland*.

Ontological Design;[13] informed by *Transition Design*;[14] considerate of *Design Research*;[15] as well as operating as an off-spring/inter-related invention of *Anti-Oppressive Systems Design*.[16] But, by and large, it is a mode of design(ing) in and with an attention for uncertainty and against the constructs that can (and do) enable a *Banality of Design*.[17]

a. to disrupt a banality of design

A Banality of Design, as defined by errantry media lab, is the commonplace, daily occurrence of making design decisions without reflective thought, which perpetuate and fortify systems of oppression. It occurs within any practice and any field of design that ignores, avoids, and/

13 Anne-Marie Willis, 'Ontological Designing', *Design Philosophy Papers*, 4:2, 2006, 69–92, DOI: 10.2752/144871306X13966268131514.

14 Terry Irwin, 'The Emerging Transition Design Approach', in Cristiano Storni, Keelin Leahy, Muireann McMahon, Peter Lloyd, and Erik Bohemia (eds.), *Design as a Catalyst for Change — DRS International Conference*, Limerick, Ireland, 25–28 June 2018, www.doi.org/10.21606/drs.2018.210.

15 Peter Lunenfelt, *Design Research: Methods and Perspectives*, edited by Laurel Brenda MIT Press, 2003; Keri Smith, *How to Be an Explorer of the World: Portable Life Museum*, 1st ed., Penguin Books, 2016.

16 'Confronting Legacies of Oppression in Systemic Design' Video conference, RSD11, University of Brighton, 2022, www.dropbox.com/s/9du5iu80odo3wwg/video1877395013.mp4?dl=0.

17 The Banality of Design is a concept that errantry media lab has extrapolated from Hannah Arendt's exploration of the Banality of Evil. In short, after Arendt observed the trail of Adolf Eichmann—a major figure in the organization of the Holocaust—she concluded that something more insidious was at play than simply intentional acts of evil. Eichmann seemed to be a man who truly thought his efficient and effective obedience to chain of command, rule of law, and socio-cultural norms excused his genocidal decision making. As such, Arendt identified his non-thinking as the source of his inhumane choices; his failure to consider his acts critically was the genesis of the evil he produced. In this scenario, Arendt wondered whether Eichmann represented 'a banality of evil': a new form of evil in which humans carry out horrendous acts, but have no 'intentions' to do so in any usual sense. To have 'intentions', according to Arendt, was to think reflectively about one's own actions as a political being, as a being whose own life and thinking is bound up with the life and thinking of others. She feared that what had become 'banal' was the non-thinking necessary to perpetuate evil unintentionally. Applied to design, this 'banality' emerges from an unconscious way of designing without questioning what, how, why, for whom, and under what circumstances such design decisions are being made, regardless of the oppressive systems embedded or afforded by such designs. Referential to: Hannah Arendt and Amos Elon, *Eichmann in Jerusalem: A Report on the Banality of Evil*, Penguin Books, 2007. Referential to Judith Butler, 'Hannah Arendt's Challenge to Adolf Eichmann', *The Guardian*, accessed 7 March 2020, www.theguardian.com/commentisfree/2011/aug/29/hannah-arendt-adolf-eichmann-banality-of-evil.

or denies the constructedness of our everyday life, ways of being, and ways of becoming-with, particularly as interdependencies of global, interstellar, and microscopic commons. It is the perpetuation of oppressive systems and inequitable distribution of the consequences of dominant paradigms by means of dogmatic, unquestioning, unthinking, and, ultimately, thought-less design(ing)(ers).

Thought-lessness, here, is not meant to convey intentional cruelty or rudeness, but rather a more literal interpretation of the word: acting without thought; absent consideration, reflection, or reflexivity. It is causing harm, not necessarily with the intention to do so, but because of unquestioned obedience to and/or ignorance of the artificiality of our individual and interconnected assumptions of reality. These are the social constructs we can easily point out as well as those we cannot recognize our own uncritical adherence to: constructs of sex, gender, and sexuality,[18] constructs of race, religion, and nationality,[19] constructs of ability and disability,[20] constructs of time,[21] constructs of logic and reason,[22] constructs of language,[23] constructs of universality,[24] constructs of emotion,[25] constructs of 'better' and best',[26] constructs of 'good' and

18 Siobhan B. Somerville, *Queering the Color Line: Race and the Invention of Homosexuality in American Culture*, Duke University Press, 2000; Alok Vaid-Menon, *Beyond the Gender Binary*, Penguin Workshop, 2020; Kit Heyam, *Before We Were Trans: A New History of Gender*, First US ed., Seal Press, 2022; Simone de Beauvoir, *The Second Sex*, New ed., Vintage Classic, 2015.

19 Theodore W. Allen, *The Invention of the White Race*, Verso, 1994 and 1997; Nell Irvin Painter, *The History of White People*, W.W. Norton & Company, 2011; Frantz Fanon, *Black Skin White Masks*, Penguin Classics, 2021; Octavia E. Butler, *Parable of the Sower*, Warner Books, 1993; Adrian Hastings, *The Construction of Nationhood: Ethnicity Religion and Nationalism*, 7th print ed., Cambridge University Press, 2007.

20 Alice Wong, *Disability Visibility: First-Person Stories from the Twenty-First Century*, Vintage Books a division of Penguin Random House LLC, 2020; Aimi Hamraie, *Building Access: Universal Design and the Politics of Disability*, University of Minnesota Press, 2017.

21 Marcia Bjornerud, *Timefulness: How Thinking Like a Geologist Can Help Save the World*, First paperback edition with discussion questions, Princeton University Press, 2020; Macfarlane, *Underland*; Douglas Rushkoff, *Present Shock: When Everything Happens Now*, Current, 2014.

22 Feyerabend, *Against Method*.

23 Wittgenstein and Anscombe, *Philosophical Investigations*.

24 Hamraie, *Building Access*.

25 Batja Mesquita, *Between Us: How Cultures Create Emotions First*, W.W. Norton & Company, 2022.

26 Alexandra Daisy Ginsberg, 'Better: Navigating Imaginaries in Design and Synthetic Biology to Question "Better"', Royal College of Arts, 2018.

'evil',[27] and constructs of 'certainty',[28] amongst many other interdependent, interconnected, and reinforcing creations of our individual and social imaginaries.[29]

A Banality of Design occurs, seemingly, because of the ease with which we, as designers, are afforded a seamless[30] path to practise the design(ing) we've learned—through education and practice and heuristic experience—as 'right', 'good', and/or 'excellent'.

But, when we abide by constructs uncritically, we participate in the perpetuation of the assumptions that underpin them. We become obedient to the behaviours, standards, hierarchies, and supremacies embedded within those assumptions. And, when we design—with and within those constructs—we design artefacts, objects, and systems that are imbued with and afford the fortification of that obedience. This ontological designing[31]—intensified by hermeneutic circling[32]—affords a deeper entrenchment and ongoingness of absent-minded oppressing.

b. to attune our design attention with uncertainty (rather than overcome it)

The seamlessness with which we settle into a banality of design is, seemingly, a designed repercussion of our reluctance to authentically, and in good faith, engage uncertainty.[33] It is a learned ignorance of the likely possibility that our constructed knowledge,

27 Simone de Beauvoir and Bernard Frechtman, *The Ethics of Ambiguity*, Philosophical Library, 1949 and 1948; Arendt and Elon, *Eichmann in Jerusalem*.

28 Empiricus Sextus and Benson Mates, *The Skeptic Way: Sextus Empiricus's Outlines of Pyrrhonism*, Oxford University Press, 1996; Michel Montaigne and M Screech, *An Apology for Raymond Sebond*, Penguin 2006; David Hume and Ernest Campbell Mossner, *A Treatise of Human Nature*, Penguin, 2005; Karen Michelle Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, Duke University Press, 2007; William Kentridge, *Six Drawing Lessons*, Harvard University Press, 2014; John Anderson Kay and Mervyn A. King, *Radical Uncertainty [Decision-Making for an Unknowable Future]*, Bridge Street Press, 2021.

29 Cornelius Castoriadis, *The Imaginary Institution of Society*, Reprint, Polity Press, 2005.

30 Matt Ratto, 'Ethics of Seamless Infrastructures: Resources and Future Directions', *International Review of Information Ethics*, 8:12, 2007.

31 Anne-Marie Willis, 'Ontological Designing', *Design Philosophy Papers*, 4:2, 2006, 69–92, DOI: 10.2752/144871306X13966268131514.

32 Ibid.

33 Jean-Paul Sartre, *Being and Nothingness*, trans. Hazel Estella Barnes, 2nd ed, Routledge Classics, Routledge, 2003.

language, models, and systems obfuscate the totality of uncertainty we, as designers (and humanity), are actually situated within. And, it is with and within uncertainty that errant design emerges... In a state of looking inward and outward and attentively recognizing the fragility, contingency, constructedness, and hinged nature of all: All knowledge; All truth; All imagination.

Acknowledging, recognizing, establishing a relatedness to this disorientation affords tremendous possibilities for our entangled and emergent designing: How might/ought we design (?)... How might/ought we make (?)... in order to think, to act, to become-with such totality... such a complex mess of interpretable ambiguity afforded by such an uncertain and unfolding nature of becoming.

This scepticism is not advocacy for the dismissal of other's perceptions or experiences or sensorial determinations of what's happen(ed)(ing). Rather, it is a space, a lens, a point-of-view for radical empathy and open-mindedness.[34] An open-mindedness from which new assemblages of 'reality' can be rearranged. A way of becoming-with, which gives, maintains, and uplifts meaning to 'concepts as they evolve'.[35]

And, for those who ask, 'If not for certainty, how do we function?' We respond, 'If not for your fear, why be certain?' For are we more scared to be unsure than we are to spend centuries oppressing others with our constructed certainties? Unless we confront our fear, our design(s)(ing) will further instil and perpetuate the innate essence (certainty) upon which the fragility of our understandings of this world rest and are aligned.

And, so, let us begin our errant designing here: prepared to wander amidst the overwhelming complexity, kaleidoscopic ambiguity, and uncertainty of all.

5. the associative principles for errant design

Errant Design is an approach that operates at the entangled intersections of three associative principles. The principles are an Ethics of Care, an In-Process Temporality, and a Becoming-With. The principles urge designers to take on different orientations towards

34 David Hume, *An Enquiry Concerning Human Understanding*, ed. by Peter J. R Millican, Oxford University Press, 2020.
35 Menon, *Beyond the Gender Binary*.

their practice as a form of ethically tethered care that functions on a deep-time and ceaselessly ongoing temporality, within an interconnectedness of all things in (and beyond) our world.

a. an ethics of care

As we've said, Errant Design is born out of radical scepticism and an intention to align our designing with the uncertainty we actually occupy and operate within. With a practice born from such criticality towards conclusions of certainty—and the approved methods, approaches, and conventions therein—it is possible to take on a sort of 'anything goes' way of thinking and working;[36] A version of: 'if there are no certainties, then why not do anything; why not be cruel, harmful, or oppressive'.

While we do not believe there are static and absolute standards of what is 'right' or 'wrong' or 'good' or 'bad', we do believe there is tremendous importance for a practice of design—rooted in uncertainty—to challenge, confront, and create conditions to upend forces of oppression; For what is oppression if not the forced adherence of one's certainties upon another?

> As soon as one gets certain their voice gets louder, more authoritarian and authoritative and to defend themselves they will bring an army and guns to stand next to them to hold. There is a desperation in all certainty.[37]

If we believe Errant Design ought to enhance our capacity to engage, be in, and become-with uncertainty, then we must take action to disrupt the certainties that oppress others. We must make design decisions, not with an 'anything goes' mentality, but with an effort to consider and make choices that uphold uncertainty as an essential category.

And so, as we embark on our journey of errant design(ing), where we (em)brace perpetual change and uncertainty, we have chosen to tether ourselves to **an ethics of care**.[38] In our practice,

36 Feyerabend, *Against Method*.
37 William Kentridge, Interview, 'How We Make Sense of the World', *YouTube Louisiana Channel*, 2014, www.youtube.com/watch?v=G11wOmxoJ6U.
38 Noddings, *Caring*.

> what we do depends not upon rules, or at least not wholly on rules—not upon a prior determination of what is fair or equitable—but upon a constellation of conditions that is viewed through both the eyes of the one-caring and the eyes of the cared-for [and cared-with].[39]

As political theorist Joan Tronto suggests, an ethics of care is built upon four fundamental pillars: attentiveness, responsibility, competence, and responsiveness.[40] These pillars form the bedrock of our care ethics. They demand rigorous attention to the often-hidden impacts of our design choices, coupled with a deep sense of responsibility for the welfare of both human and more-than-human worlds.

Attention is also of extreme importance. For 'attention is the rarest and purest form of generosity... [it] consists in giving ourselves, our time, our energy, to the other'.[41] It is a state of heightened awareness; a focused entanglement with the world around us. With attention, we make deliberate efforts to be fully present and attuned to the needs of others, as well as to the broader social, political, and ecological contexts in which we live. Derived from philosopher Simone Weil's thinking on attention, our own ethics is informed by her demands for pure and selfless attention—free from personal biases. It is a call to give our attention, not just as a tool, but also as a path to spiritual growth; engaging the mysteries of the universe through the intimate act of bearing witness. By giving this attention to and with our designing, we strive to overcome the limitations of our egos and cultivate an unwavering empathy and compassion for all things we design for and with.

What we mean by responsibility is also critically important to understand. Here, we draw from transdisciplinary theorist Donna Haraway's 'response-ability' to expand the notion of responsibility. 'Responsibility is about the ability to respond, the ability to answer to the other. In the context of a shared world, responsibility is always response-ability'.[42] Through cultivating this ethic of response-ability,

39 Ibid.
40 Joan C. Tronto, *Moral Boundaries: A Political Argument for an Ethic of Care*, Routledge, 1993.
41 Simone Weil, *Gravity and Grace*, trans. Emma Crawford and Mario von der Ruhr, Routledge, 2002, 33.
42 Donna J. Haraway, 'Staying with the Trouble: Making Kin in the Chthulucene', Duke University Press, 2016, 14.

we acknowledge the ways in which our design(ing) impacts the lives of others and commit ourselves to designing with an awareness of the interconnectedness and interdependence of all beings. Through an ethics of care heavily informed by attentiveness and a sense of response-ability we can perpetually consider the broad implications and potential (un)intended consequences of our work, across all timelines and dimensions, both human and non-human. We recognize the intricate interconnections between all things and commit ourselves to designing with a mindful awareness of this interconnectedness.

As we navigate our errantry, the pillars of care, an open attention, and a sense of response-ability serve as a compass to guide our way; they afford a sort of celestial navigation through the 'constellation of conditions' to consider as we care-for and -with the human and more than-human-worlds we affect.

b. an in-process temporality

In-process invites us to consider the interconnection of past, present, and future timelines and to embrace an ongoingness that acknowledges the nonlinearity, interwovenness, and perpetuity of design(ing). This way of being errant in design allows us to engage on multiple timelines all at once.

To be in-process is to embrace deep-time;[43] to recognize the vast scale of geological and ecological time and our place within it. We are not isolated individuals, but rather part of a larger network of lifeforms, woven together in a dance of interdependence. In this dance, we move with intention and grace, always mindful of the steps we take and the impact they have on the world around us. We recognize that the path to transformation is not linear or straightforward but a constantly evolving process of growth and adaptation, and we remain open and responsive, always seeking new ways of becoming-with all beings.

In-process with deep-time awareness is also taking on the crucial task, with fervent intent, of assessing our positionality and proximity to systems of oppression. In-process, we move and measure our unearned advantages and disadvantages, to stay accountable and response-able to the consequences of actions; we come to recognize that some assumptions we make and actions we

43 Macfarlane, *Underland*.

take to care can cause harm over time, and we are able to respond and repair.[44] In-process is endless navigation through tricky terrain with caution and refrain, with a steadfast commitment to care. Mindful of our positionality, we move with poise and pause.

In-process with deep-time awareness is a response to mistakes and accountability for mistakes. We are in-process when we recognize that 'finality' can be the invalidation of experience, of consequences—a hindrance, a cease of care. To be in-process is to expand through the awareness of our interconnectedness, to be overwhelmed by endless possibilities and connections, to move with the currency of feelings, empathy, and care. In-process moves away from the finality—towards longevity, circularity, biodiversity collaborating with all, iterations over time, over deep-time, in ecological complexity.[45]

In-process with deep-time awareness is an exercise of imagination, of possibilities, it's looking at our actions and impact as connected individuals, as a collective.[46] An extension of the self, our bodies eventually fungi—mycelium. In-process we become spores, and everything else, we become-with. In-process is wishing we

> could photosynthesize so that just by being, just by shimmering at the meadow's edge or floating lazily on a pond, I (we) could be doing the work of the world while standing silent in the sun.[47]

We remain in-process by constantly oscillating between states of completion and incompletion, recognizing that our mistakes are sometimes opportunities for growth and learning. We are committed to ongoing reflection, adaptation, and evolution, recognizing that true care requires constant attention and effort.

In-process is also a steadfast commitment to staying with the trouble;[48] to resisting the urge to oversimplify the intricate, interconnected systems that make up our world. It is an embrace of the beautiful messiness of entanglements; a recognition that our actions reverberate and ripple through time and space, affecting not

44 De Beauvoir and Frechtman, *The Ethics of Ambiguity*.
45 John Vandermeer and Ivette Perfecto, *Ecological Complexity and Agroecology*, Routledge, 2017.
46 Adrienne Maree Brown, *Emergent Strategy: Shaping Change Changing Worlds*, AK Press, 2017.
47 Robin Wall Kimmerer, *Braiding Sweetgrass*, Milkweed Editions, 2013, 185.
48 Haraway, 'Staying with the Trouble', 18.

only ourselves but all that surrounds us. In-process we strive to be compost, to be part of a larger network of care and transformation. We become spores, extending the self, powering the wood wide web,[49] collaborating with all to transform our communities into networks of care.

c. a becoming-with

Errant Design recognizes we are in perpetual acts of becoming with everything, everywhere, all at once; a sort of constant, relational informing/being informed, learning/teaching, designing/being-designed, and affecting/being-affected.

We become-with when a book reframes our perspective and we reframe the meaning of the book through our own lens(es). We become-with when we climb a tree and feel the way its roughness informs our sense of texture and relationality to non-human species. And, in return, we affect the growth and direction of the tree itself with our weight. In our estimations, thoughtful awareness, and engagement of such becoming-with seemingly benefits and manifests from:

- Making-as-Thinking:
  Interacting with thoughts in a tactile way, using our bodies to gain understanding of structures.
- Sensing-Uncertainty
  Pausing and inquiring about the uncertainties that underpin the certainties we assume are there.
- Staying-with-Complexity
  Resisting the urge to foreclose and instead getting tangled with people, concepts, biodiversity, and thoughts to render capability and possibility.

I. Making-as-thinking

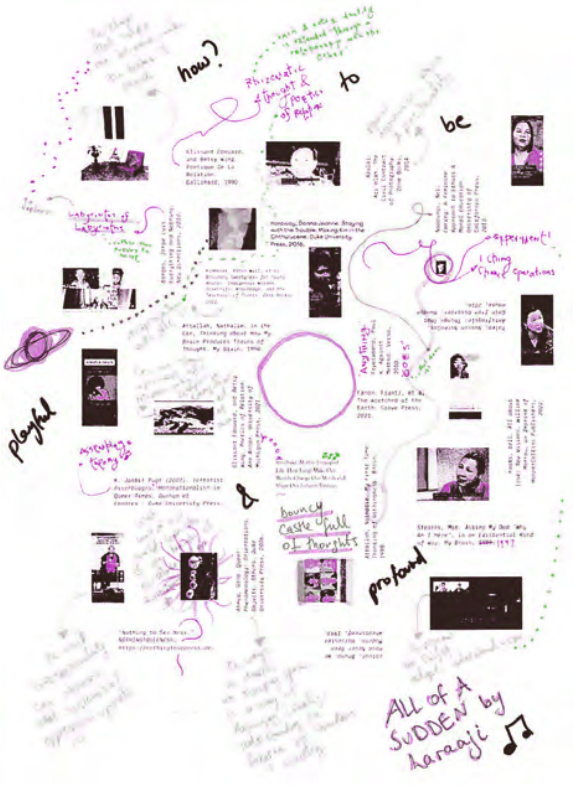
Making-as-thinking is a w(o)(a)nder into the corporeal; a dialogue between our senses and our sense-making. It is a becoming-with process that dissolves the boundaries of our sense of self, enabling us to engage in a more holistic form of understanding and connect with the world around us. Through making-as-thinking, we strive

49 Suzanne Simard, *Finding the Mother Tree: Uncovering the Wisdom and Intelligence of the Forest*, Penguin Books, 2022.

to undergo a transformative process of praxis[50] informed by queer phenomenology[51] and queer ecology.[52]

Our making-as-thinking works to shatter the boundaries and false binaries that separate us from the world, including the more-than-human world. We become makers, creators, and innovators, and our sense of (our)self-expanding. Through this process, we can better understand and appreciate our proximity to things, people, concepts, and the more-than-human world. In doing so, we realize that the act of making-as-thinking is not just about making or thinking, but rather a way of becoming-with and belonging, a way to shape and be shaped by the world around us.

Making-as-thinking is a process that asks us to engage (with attentiveness and thought-fullness) with (care-full) shaping and becoming-with our worlds.



nathalie attallah & max stearns, *thinking by making by making-as-thinking*, 2023.

50 Paulo Freire, *Pedagogy of the Oppressed*, Continuum, 1993.

51 Sara Ahmed, *Queer Phenomenology: Orientations, Objects, Others*, Duke University Press, 2006.

52 Catriona Mortimer-Sandilands and Bruce Erickson, 'Queer Ecologies, Undoing Nature: Coalition Building as Queer Environmentalism', in Catriona Mortimer-Sandilands and Bruce Erickson (eds.), *Queer Ecologies: Sex, Nature, Politics, Desire*, Indiana University Press, 2010, 1–16.

II. sensing uncertainty

How wondrous it is to sense our uncertain state. For it is through uncertainty that we approach life with a sense of possibility and openness, ready to uncover the unknown and learn from what we do not understand. Ready to feel and see and hear and touch and, more generally, sense the means by which uncertainty sits as the centrepiece of orderly pieces of performed certainty all around it.

It is present in the realm of science, where we must approach our research with a sense of humility and curiosity, ever open to unexpected results and new perspectives.[53] To cling to predetermined hypotheses is to limit ourselves, for it is in embracing the uncertain that we discover new insights and forge new paths of understanding.

It is present in the realm of philosophy, where we must embrace the complexity and ambiguity of life, for it is through avoiding 'the mischief of premature clarification' and instead trusting we'll 'be in a position to understand later on' that we can

53 René Descartes, *Discourse on the Method for Reasoning Well and for Seeking Truth in the Sciences* (1637), Andrew Baily (ed.), Ian Johnston (tr.), Broadview Press, 2020.

appreciate the diversity of human experience and the richness of the world around us.[54]

It is in the realm of art, where we must use our creativity to explore the unknowable and incomprehensible, using metaphor and symbolism to delve into the mysteries of existence.

It is in our everyday lives, when we must listen to other perspectives, question our assumptions, and recognize that there are always multiple ways of understanding the world. By embracing the complexity and diversity of human experience, we can create communities that are inclusive and compassionate, where everyone is valued and respected.

And it ought to be present in the realm of design, where we must sense and afford uncertainty as an ever-present challenge;[55] where we must patiently and constantly (re)consider the structured and constructed conclusions we've reached in order to unlock, open, and engage them as questions rather than answers. By designing the means to find and open those questions, response-ably, we design to afford others the opportunity to peer through and allow and encourage others to engage them as well.[56] Together.

Rather than deny uncertainty in order to resolve the tensions of non-knowing and not-understanding, we—as errant designers—aim to sense it, embrace it, and courageously wander amidst it as part of our practice. Not as a the problem; but as an integral part of our entangled nature in/with/of the universe.[57]

III. staying-with-complexity

The idea of staying-with-complexity is a way of acknowledging and engaging with the complexity of our world without attempting to control or solve it. This approach recognizes that the socio-environmental circumstances we are situated within are messy and

54 Gilles Deleuze, Guattari Félix, and Brian Massumi, *A Thousand Plateaus: Capitalism and Schizophrenia*, Reprinted ed., Bloomsbury, 2019. Jeffrey T. Nealon, *Post-Postmodernism or the Cultural Logic of Just-In-Time Capitalism*, Stanford University Press, 2012.

55 Jenny L. Davis, How Artifacts Afford: *The Power and Politics of Everyday Things*, MIT Press, 2020.

56 Ibid.

57 Karen Michelle Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, Duke University Press, 2007.

interconnected and that attempts to impose order and control can have detrimental impacts in the long-term.[58]

This concern is magnified when we reflect on the constructedness of all linguistic, philosophic, scientific, and technological conclusions we've reached to date. The wicked problems we attempt to solve are made only more wicked when we recognize their complexity is not just a complicated mix of known categories and quandaries, but a knotted mess of interoperable conclusions we've forgotten we've constructed. Thus, while each of the practices discussed above surely have tremendous advantages, we should still be wary of the elements that self-intuit an ability to control, i.e., solve, complexity.

In contrast, staying-with-complexity offers an abstract way of interpreting and navigating the totality of our complex and constructed worlds and systems. It affords an approach to learn, live, and design with, and in, the nature of our complexity, rather than trying to universally understand and solve it. This approach allows us to do so by interpreting and navigating our more-complex-than-comprehensible constructed worlds and systems through poetry and play.

Poetry allows us to engage with the ambiguity of the world and removes the demand to know and understand it.[59] It inspires and informs us, and empowers us to respond poetically to the complex challenges we face. Similarly, playfulness allows us to re-ambiguate the world and make it less formalized, less explained, and open to interpretation and wonder.[60]

A poetic and playful approach embraces the ambiguous nature of an all too complex world and removes a demand to know, to understand, and to solve it. Instead, it gives space to play, to explore, to learn, to make, and to become-with.

58 Consider: the introduction of automobiles, which 'solved distance problems, but resulted in urban and environmental catastrophe', William McDonough and Michael Braungart, *Cradle to Cradle: Remaking the Way We Make Things*, Print, Vintage, 2009. The initial introduction of search engines, which 'solved' inaccess to information, but resulted in deeply entrenched surveillance capitalism (Shoshana Zuboff, 'Google As a Fortune Teller: The Secrets of Surveillance Capitalism', *Frankfurter Allgemeine*, 2016); or the introduction of The War on Drugs, which 'solved' public safety problems but resulted in the mass incarceration and over-policing of people of colour (Michelle Alexander, *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*, New Press, Distributed by Perseus Distribution, 2010.

59 Audre Lorde, *Uses of the Erotic: The Erotic As Power*, Out & Out Books, 1978.

60 Miguel Sicart, *Play Matters*, paperback ed., MIT Press, 2017.

II.

Design, Body, and Ecology

Materiality of Common Good Objects

Torange Khonsari

Torange Khonsari is Co-Founder and Director of the urbanism, public art and architecture practice Public Works, an inter-disciplinary practice working on co-production methods in art, architecture, urbanism, systems thinking, and citizenship. Having taught architecture and design at international universities for over twenty years—including at UMA School of Architecture (Sweden), the Royal College of Art (London) and as visiting Professor at International University of Barcelona's MA on emergency architecture and the Barbican and Guildhall school of Music and Drama (London)—she is currently the lead course for post-graduate and doctoral courses 'Design for Cultural Commons' at London Metropolitan University. Her projects directly impact public space, working with local organizations, communities, government bodies, and stakeholders.

Introduction

This chapter takes a commons sphere to mean the network of spaces, communities of practice, common interests, and common good objects produced through action for a collective purpose. Unlike public goods that adhere to an abstract and universal logic, common goods involve a more concrete logic situated within a particular defined collective community and location. The theoretical framework of common good used here is not communal common good where citizens are directed to put aside personal interest in favour of wider civic interest, which poses the question of who decides. The distributive common good starts with the idea that citizens belong to various interest groups and needs and where the outcome of benefit is more particular and is achieved through collective engagement and action.[1] In this form, common goods also seek to evade both the hegemony of the public state and private markets. This distinction has implications for the macro system in which such goods are given their value, meaning, and form of production. Daniel Miller problematizes capitalism as severing our material culture from ourselves and replacing this with an alternative material culture imposed by the hegemony of capital.[2] By positioning the self and its objects in the background whilst foregrounding the collaborative relations that shape them as concrete, we can enable new and plural forms of cultural and socio-political knowledge and life to emerge. It should be noted that the intention here is not to disband the private or the public; rather, the aim is to foster a new relational dimension between the three spheres where the individual and the collective positions are negotiated to inform and influence the further articulation of a commons sphere and its material system. Cultural production in the commons through art and design has the potential to act as a driver in addressing a range of pressing societal concerns including: civic apathy; active citizenship rather than passive consumerism; extreme individualism; extractive production of raw materials, and the appropriation of cultural artefacts.[3] My doctoral thesis found that there are close relationships between cultural resources in the commons and the concept of common good as framed in politics, economics, and

1 Waheed Hussain, 'The Common Good', in *Stanford Encyclopaedia of Philosophy*, 1st ed., Stanford University, 2018.
2 Daniel Miller (ed.), *Materiality*, Duke University Press, 2005, 3.
3 Jean Baudrillard, *The System of Objects*, trans. by James Benedict, VERSO Books, 1968.

philosophy. Within these relationships, the process of producing cultural common goods is of particular importance, as it is through this process that communities build trust and gain agency within a commons network, which in turn requires the further establishment of the 'commons sphere'. My doctoral research resulted in several methods of 'cultural commoning' as collective actions/doings that produced the tangible common good resources and the intangible common good of new localized political communities. It also found that the majority of material objects (art or design) produced today circulates either in the system of market or, the system of the state and there is no system for ground up community which I frame here as the sphere of commons.

Materiality and culture strongly influence each other in the production of meaning. The current literature on cultural commons focuses on heritage,[4] knowledge, and forms of expression embedded in Indigenous ethnic social groups.[5] At present there is limited knowledge about how a system of objects can be produced and circulated within a commons sphere without being an extension of public (state) and private (market) systems. My research used the theoretical framing by Jean Baudrillard in his seminal book *System of Objects*, where he critiques the capitalist system within which objects gain value and flatten as signs, to understand how common good objects can have agency rather than becoming consumable signs.[6] In his book *Omnia Stunt Communia,* Massimo De Angelis introduces the commons environment for the circulation of common good and production of agency for its resources and users.[7] This environment has boundaries of access that sets up its primary institutional design to be permeable without discrimination.

As the third space between the state and the market, the commons boundary of access is its most significant design project. It sits between the market (which prioritizes enclosures and where access is embedded in finance) and the state (whose conceptual logic is to have no enclosures at all). The commons approach to boundaries is agile, constantly in flux, responsive yet based on concrete social

4. Enrico Bertacchini, Giangiacomo Bravo, Massimo Marrelli, and Walter Santagata, 'Cultural Commons: A New Perspective on the Production and Evolution of Cultures', in *Cultural Commons*, Edward Elgar Publishing, 2012.
5. Charlotte Hess and Elinor Ostrom, *Understanding Knowledge as a Commons: From Theory to Practice*, MIT Press, 2007.
6. Jean Baudrillard, *The System of Objects*, trans. by James Benedict, VERSO Books, 1968.
7. Massimo De Angelis, *Omnia sunt communia: On the Commons and the Transformation to Postcapitalism*, 1st ed., Zed books Ltd, 2017.

relations. Managed by a finite community, commons' boundaries have governance that are carefully conceived to be permeable and enable relationships of trust. Thus the institutional depth of the commons resides in its social and physical boundaries,[8] termed by De Angelis as boundary commoning.[9]

There is an abundance of literature on the materiality of things in capitalism[10] as private goods and of their impact on public good,[11] but the sphere of the commons and their production outside their connection to the public or the private remains in need of further investigation and knowledge-production. This chapter uses one specific project from a commons organization I co-founded entitled 'Public Works' in a neighbourhood in East London (Bow). I initiated the project in 2014 after being asked to get involved by local residents. The methodology used for research in this chapter frames practice as doing and draws upon my case study work and projects that I have conducted. The first methodology described below articulates a place-based model of researcher in residence (Fig. 1) whilst the second methodology of practice as doing articulates the production of cultural commons (Fig. 2) to conceptualize a system of common good objects.

Method – Public Living Room

The primary method to investigate the materiality of commons is grounded in artistic practice of being embedded in communities or situations in the form of a residency as an 'incidental person'.[12] The geographical location was in a neighbourhood in Bow, East London, where a residency space was created by myself and my architecture students. An unused gap site on the Roman Road high street in Bow was identified and the land negotiated with the landlord (Clarion Housing Association) to be used for two to three years for the purpose of research and teaching. The informal handshake agreement with the community officer meant bureaucracy did not slow down this process. The temporary architecture of the residency

8. Gabriel Popescu, *Bordering and Ordering the Twenty-First Century*, Rowman & Littlefield Publishers, 2011.
9. Massimo De Angelis, *Omnia sunt communia*.
10. Daniel Miller (ed.), *Materiality*, Duke University Press, 2005.
11. Raymond Geuss, *Public Goods, Private Goods*, Princeton monograph in philosophy, 2003.
12. Rycroft, Simon, 'The Artist Placement Group: an Archaeology of Impact', *Cultural Geographies,* 26:3, 2019, 289–304.

space was constructed with the help of residents and architecture students. It was later named by the residents 'The Common Room' and was likened to a public living room (Fig. 1). It was initially created to test an open access temporary classroom that could support communities on the Roman Road high street in Bow in developing it as a common space, but by the end of the research the space became an integral part of the research method as the node where I collaborated and connected with residents and community groups.

Fig. 1: Method of Situating: The Common Room as Public Living Room, Bow, East London.

Lack of funds for service infrastructure such as a toilet and electricity reduced the possibility of the space being used for long hours. Although some people dropped by during teaching hours and some even joined in, this was a rarity. To fully engage with local people, funds had to be raised for specific activities that were needed/desired and some activities were offered by resident volunteers to keep the space active. At the start, my presence as resident in 'The Common Room' involved conversations and dialogues that led to the instigation and local support for setting up a neighbourhood plan for the area[13] and the development of community gardens

13. Neighbourhood planning is a legal system of bottom-up urban planning through which communities seek to shape new and existing neighbourhoods and create the neighbourhood plan that developers and local authorities need to comply with—part of the Localism Act 2008.

and the community organization Edible Bow. The community organization that brought me into the project later became the main host, which ended my role as community facilitator. The activities that arose as a result of being situated in a neighbourhood and engaging with various communities and groups led to further the method and to the need for conceptualizing art and design artefacts as common goods within a commons sphere.

Method – Commoning Practice

Whilst 'The Common Room' as a Public Living Room created the embedded situated method to start the research, the method described here as a commoning practice refers to the process of producing common goods. As such, it is important to expand on the definition of a common good mentioned in the introduction based on a distributive model. The common good which is aggregately conceived creates a commons environment in which all of the members of a political community are fully flourishing; it is built on the idea of well-being and agency,[14] hence on practices that produce common good through collective participation and action. Whilst Hussain describes this framing as distributive, Murphy calls it aggregative. In this form it is harder to have a singular voice that defines common good from the top or common interests determined by the most empowered. Figures 2 and 3 illustrate the method of cultural commoning described below.

The method (Fig. 2) starts with the identification of the practitioners' intention.

a) Intention drives the quality and logic of the final output. For example, if the intention is to create a product that is successful in the market and its indicator of success is linked to how much money it generates, then every step in the practice reflects that intent. This positions the product as primarily a private good, although it can have public and common good properties that remain secondary. Production of goods will ultimately move between the private, public, and common but the argument in this research is that understanding the primary sphere and logic for the intent is important

14. Mark C. Murphy, 'The Common Good', *The Review of Metaphysics*, Philosophy Education Society Inc., 59:1, September, 2005, 133–164.

to ensure one hegemonic sphere does not co-opt the other. In producing such common goods, action has been discussed as being a key method; this includes design interventions be they events, installations, or temporary architecture.

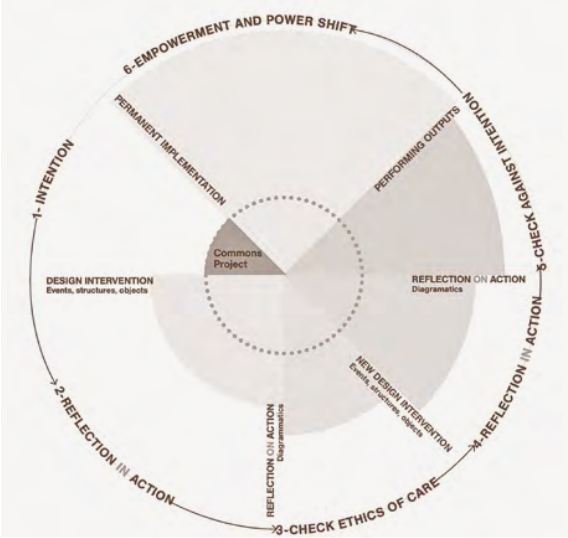


Fig. 2: Method of Commoning Practice: Intervention and Action.

b) Design intervention is a form of inquiry discussed by Boffi and Halse as an appropriate method 'to investigate phenomena that are not very coherent, barely possible and almost unthinkable as they are still in the process of being conceptually and physically articulated'.[15] The term intervention means coming in between and interfering in an occasion to create a preferred state, enabling new forms of expression, experience, and dialogue giving rise to new problems and situations.[16] Interventions produce knowledge through 'intuitive performance in the actions of everyday'.[17] In action, our knowing comes from the way we act and what the action produces. In other words, and as I employed throughout my research, non-rational knowing implies that we are unaware of how we know and that we act through intuitive reflective actions.[18]

15. Laura Boffi and Joachim Halse, *Design Intervention as a Form of Inquiry, Design Anthropological Futures*, 1st edition, Bloomsbury Press, 2016, 89.
16. Ibid, 90–105.
17. Donald Schön, *The Reflective Practitioner*, 3rd ed., Routledge, 1983, 49.
18. Ibid, 54.

c) Reflection-IN-Action, theorized by Donald Schön, offers a critical dimension whilst intervening in social contexts that are uncertain. Events that occur in action can never be fully controlled and thus as a researcher the experience and ability to respond with agility to situations becomes a skill the method enables (Fig. 3). This required skill is described by Schön as agility in uncertainty, a dialectical engagement between ideas and the material world that locates design in a changing social environment.[19] Repeated design interventions lead to the evolution of experiences over time, to knowledge of both successes and failures being gained, and towards new knowledge of how to respond in unpredictable situations. This tacit knowledge gained through repeated experience is why the same intention can work in one project and may fail completely in another.

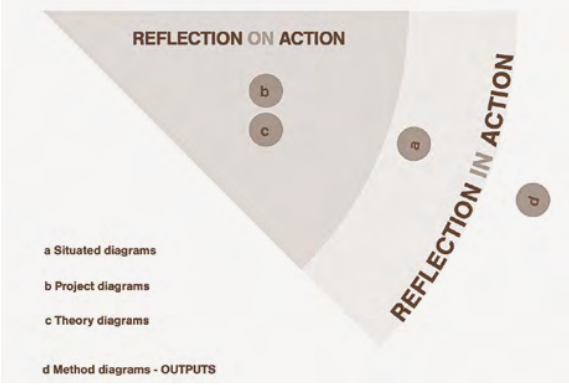


Fig. 3: Method of Commoning Practice: Diagrammatic Reflection on and in Action.

d) Reflection-ON-Action is based on the organization of knowledge post the interventions for reflection and analysis. This allows us to learn how to apply that knowledge further and develop the practice, deconstruct established knowledges, and reconstruct it for contemporary needs. Four different types of diagrams were used to both document and analyze the information whilst reflecting ON and IN action. Diagrams as methodology for analysis of these practices are relational and are used to visualize abstract systems, which show constantly changing relationships before they are

19. Christopher Crouch and Jane Pearce, *Doing Research in Design*, Bloomsbury Visual Arts publishing, 2019, 38.

concretized in an image or object of representation.[20] Four types of diagrams were used in this research for such a purpose: (1) Situated diagrams (Fig. 4), (2) Project diagrams (Fig. 5), (3) Method diagrams, and (4) Theoretical diagrams.

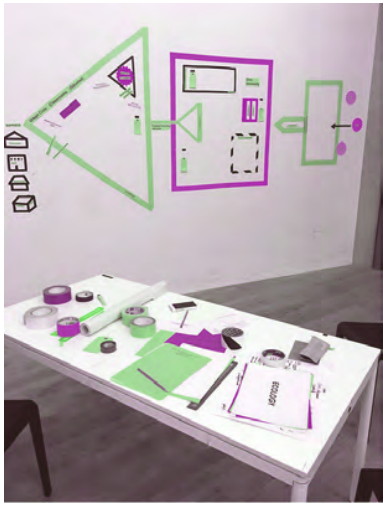


Fig. 4: Method of Commoning Practice: Situated Diagram.

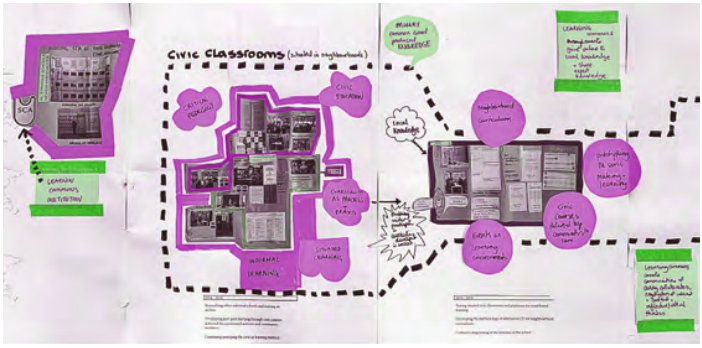


Fig. 5: Methodology of Analysis: Project Diagrams.

Situated diagrams were used as a way to develop systems, organizational structures or programmes collaboratively with co-producers 'in' action. These were made in the research locations using coloured tape, sticky labels, and stickers, allowing ideas to change based on social engagements and dialogues in events. Project diagrams were more individual reflections 'on' events as post project analysis.

20. Jakub Zdebik, *Deleuze and the Diagram*, Bloomsbury Academic, 2014, 1–23.

Method diagrams were designed with a graphic designer to communicate the methodological results with audiences outside the research project. Theoretical diagrams were diagrams of scholarly material across different disciplines on the same theme and concept. Theory diagrams were created pre and post intervention and used to critique the actions on site and operated as reflective tools. This methodology aligned with the concept of design as a circular process.[21] Embedded in every intervention was the consideration of ethics, which used theories of relational ethics of care. In their book *Relational Ethics: The full Meaning of Respect*, Bergum and Dossetor describe ethical action as experientially and culturally embedded within forms of situated practice.[22] Relational ethics questions the centrality of justice with its focus on individual rights and focuses on connections between caring selves. The ethics of care has the ability to build a culture of care in how individuals treat each other in an environment. After the research was conducted, a manifesto was created to be placed in future Public Living Rooms: this manifesto sets the terms of engagement yet allows residents to add and contribute to it as the project progresses. In the project 'The Common Room', plural common good artefacts were produced after over twenty interventions. The methods described in sections 2 and 3 on the production of cultural and material commons required human resource in terms of time and commitment. Lack of consideration of labour practices in the commons, and failing into a naive assumption of its sustainability through free and volunteering labour, leads to the premise of a commons sphere becoming ineffective.

Labour in Commoning

The discussions of labour in literature on the commons is thin; where it is mentioned, it advocates the production of commons through non-monetary labour. This is one of the most fundamentally flawed conceptions of the commons, as it marginalizes non-monetary labour in the global capitalist contexts and supports precarious

21. Kaustuv De Biswas, Jeremy Ham, Weixin Huang, Thomas Fischer, Beyond Codes and Pixels, *The Proceedings of the 17th International Conference on Computer Aided Architectural Design Research in Asia*, 2012, 686.
22. Vangie Bergum and John B. Dossetor, *Relational Ethics: the Full Meaning of Respect*, University Publishing Group, 2005, 34.

labour conditions. In English the word 'labour' is about a type of doing that is subject to external compulsion or determination.[23] John Holloway uses the word 'doing' rather than labour as time spent in actions that are self-determining. The agency attached to self-determined doing is the type of work Holloway believes an empowered society requires. He sees a problem with the focus on labour and price, in that it flattens the relations of exchange to a singular quantitative value. This in turn has an effect on the quality of what we do and consequently on the agency and culture of the social context. Holloway's attempt to use 'doing' as a creative act of social organizing is useful in framing labour within the commons but not so useful in that he also promotes the construction of the commons using free non-waged time. The institutional conformity of management constantly tries to pacify local tensions and redirect the idea of labour towards its abstract form which is the opposite of self-determined labour.[24]

We are socialized by our families, schools, and universities to consider labour as an abstract variable in our drive for capital accumulation, as the only avenue for success. This universal belief is how abstract labour dominates unchallenged[25] and breeds inequality through the employer/employee paradigm. This socialization affects our fundamental ability to imagine and innovate alternative forms of labour. If we are not to labour under the command of capital then we should do what we see as necessary to provide the relationships of care that capitalism deems unnecessary.[26] This empowers and emancipates us from the abstract concept of labour as primarily a means to sustain power and capital and enables us to have choices to be 'other'. Doing creates practices that don't fit, its practitioners are what Holloway calls 'misfits' that are marginalized and are often in a position where they are expected to apologize for not fitting in which in turn creates hopelessness. To make changes it is necessary to feel valued and requires confidence and mental strength. Holloway's dominant positioning of labour as always in the service of capital (heavily influenced by Marx) is, however, limiting within the creative field of cultural commons. With reflectivity, reflexivity, and application of the ethics of care, labour can transform work

23. John Holloway, *Change the World Without Taking Power*, Pluto Press, 2010, 84.
24. Ibid, 178.
25. Ibid.
26. Ibid, 84–85.

as an activity for the construction of common good and the commons but this requires a radical re-organization of how we labour, produce, and get rewarded for work. If one labours to produce common good rather than commodities then its use and exchange value are no longer enslaved to the paradigm of capital production; as a result, the quality of labour relationships change. This was demonstrated in a small scale in this research through commoning methods as well as by critically assessing the images and objects these produce towards social production of new spaces.

The commons occupy Holloway's cracks, where not only the definition of labour shifts from its Marxian context but also where the relations of power and forms of cultural resources (common good) are transformed. Here models of cultural practice can become a point of departure to analyze other domains where labour alienates its subjects and becomes a power independent of the labourer. Waged labour is framed within Marxist theory of abstract and concrete labour, where the abstraction is the exchange value created for the market and the concrete is its use value based on particular human need. Marx argues these cannot be separated whereas Holloway argues that there can be a complete subordination of the concrete to the abstract. This helps us to reframe self-determined labour within the commons as the production of common good within a non-commodity paradigm: 'Abstract labour involves a drive towards determination of our activity by money, whereas useful labour implies a drive towards social self-determination'.[27]

My concern however with the functionality of the use value of labour is that many commodities can be framed as useful. Through being localized, the commons produce common good in situated places, based on concrete social relations, conducted with care where functional need offers both political agency and emotions present in our everyday experiences. This emancipatory, relational, and caring form of labour needs to be financially rewarded and valued in societies where finance offers security. Holloway positions our refusal to subordinate our activity to an abstract concept of labour through shifting our focus away from continuous accumulation and the demand for money. This places money not as a common good but as a useful instrument in the production of common good

27. John Holloway, *Crack Capitalism*, Pluto Press, 2010, 173.

such as fees for one's labour in the production of the social. Once concrete labour is emancipated from being enslaved to the service of consumable commodities, it can be repurposed to focus on environmental and social impact. The concern within the commons with market co-option can be avoided through the practice of critical reflection and rigorous design of methods of commoning.

Determining the value of labour through its ability to generate and accumulate money has created the condition of time scarcity and time enclosure, placing obstacles in the way of concrete labour to be mobilized beyond capital. Currently self-initiated projects in the commons are not sustainable if not supported by other forms of work in the public or private sphere. With a plural, interdisciplinary approach, commons organizations can co-operate within a supportive network of practices that share projects, which enables them to take on commissions appropriate to their mission. This shift in self-determination allows organizations within the communities of practice to set up their own emancipatory processes, forms of governance, project outputs, and impacts whilst at the same time being in control of their own labour conditions. In doing so, they can shift the terms of labour from abstract to concrete. This type of labour organization requires reflectivity and critical thinking to become part of Holloway's 'doing' as an attempt to gain control over ones' work. Occupying the cracks as 'misfits' does not mean not engaging with institutions of power but having reflective-action-centric terms of engagement so that commons don't adopt the logic of the institutions of power and reproduce their rhetoric. Here the relationship between the public, the common, and the private is complex and requires constant questioning. Practices that 'misfit' are those that split open the unitary character of abstract labour towards the making or visualizing of 'cracks'.[28]

Cultural Common Goods

In the Common Room project, cultural common goods such as the temporary architecture, activity reports, events, collective art, and the neighbourhood plan were framed as objects of local value and diverse cultural expression that offered voice to a collective and

28. Holloway, *Change the World*, 180.

individual community network. These goods can be conceptualized to construct what John Holloway calls 'cracks', as new forms of practice and governance within the neoliberal agenda of market hegemony.[29] Common goods as art, design, and architectural objects can be mobilized as tools to further production and resilience of social and political communities in neighbourhoods. They provide the basis for production of a new waged labour based on its concrete conception rather than volunteering within the sphere of community and the commons. Within the field of art/architecture and design, common goods become the physical manifestations of cultural forms that reveal plural common interests within a neighbourhood.

Through the practice of commoning, cultural common goods are produced and their agency mobilized and legitimized by the collective interest and needs that created them. They circulate within systems of relational power,[30] exchange, and use that is managed as collective pooled resources. To ensure power flows across the material system, an intent that all actants[31] both human and non-human have power at one point over the life of the project becomes part of the design of the production of the commons. For example the feasibility report titled 'Interact' that supported 'The Common Room' was a common good that is freely accessible and downloadable for the local community. Yet its agency is not in its free use but in its form of production and in its content—created by local voices rather than expert ones. Locals as experts offering their plural interests were brought together in a document that illustrates collective commonalities. Here the feasibility study was not a bureaucratic tool to substantiate an already existing decision, but an action plan for the community to initiate projects from the ground up that serves the common interests of the neighbourhood as defined by the residents. The system within which the report's content is produced (social activities), used (by residents), and circulated (locally), all have agency as they prove the value of the site beyond capital. The fact that the form of the common good was a feasibility study and familiar to the public sector meant they

29. Ibid.
30. Robert Mesle, 'Relational Power, Personhood, and Organisation', in Jennifer Howard-Grenville, Jennifer A. Howard-Grenville, Claus Rerup, Ann Langley, and Haridimos Tsoukas (eds.), *Organizational Routines: How they are Created, Maintained, and Changed*, Vol. 5., Oxford University Press, 2016.
31. Conceptualized by Bruno Latour in his theory of Actor network theory (ANT), an actor (actant) is something that acts or to which activity is granted by others. It implies no motivation of human individual actors nor of humans in general. An actant can literally be anything provided it is granted to be the source of action.

understood its value and mandate. The report is a common good ('crack') whose function of resisting land enclosure is in the disruption of the ordinary and the familiar (feasibility studies). In other words, each actant has an empowered role at different points in the construction and running of the commons and its continued practice. The relationships with overt power (land owner or dominant organization) in this network should never be static to become accumulative; overt power should be designed to be in a constant state of flux and new methods to map power in commons projects be required for future projects.

'The Common Room' as a temporary piece of architecture became a common good object and resource that protected the land from privatization and also supported the production of further common good resources such as feasibility studies, campaign videos, and community gardens. Commons scholars agree that cultural commons where cultural common goods circulate don't suffer from their cultural resources being depleted through their use. It is agreed that the more cultural common goods are used and circulated the more they produce value.[32] However, this generalized framing does not take into consideration the impact that the production and distribution of cultural resources has in complex societies and on the planet. The design of forms of commoning practice becomes a field that crosses institutional design, participatory art, citizenship, artefact design, and system design, moving away from simplistic notions of governance by consensus that can be dominated by the empowered and privileged voices. The notion of temporary architecture or design intervention as both a common good and a method becomes a constituent part of a cultural commons that can offer decentralized common ground to plural voices. These interventions were spaces of negotiation and required careful facilitation to enable multiple communities of interest to produce their own needed resources, aided by the agency of common good artefacts. Dependent on the need and the context of the neighbourhood, resources might be freely and easily available or they might need to be fought for. As such, cultural common goods formed a material infrastructure whose logic and function became synonymous with promethean disobediences. The functionality of artefacts created were judged based on what they politically

32. Charlotte Hess and Elinor Ostrom, *Understanding Knowledge as a Commons: from Theory to Practice*, MIT Press, 2011.

achieved, how they produced new ways of 'doing' as practice, critiqued labour practices, and intended to create agency for their communities. In this context, cultural common goods became actants whose relationships of agency were shared and circulated. Here the empowered humans created the non-human goods and these in turn propelled the human agency further. This raised the question of whether the duality of function and intention was a more useful frame for producing projects as 'cracks' than their function and use. The functionality of cultural common goods aligned to their intent as objects of hegemonic resistance. For example, in the case of 'The Common Room', the DIY chairs made by residents and students, the feasibility reports, the neighbourhood plan, the community groups, and the events all played their part within the network of actants (the resource pool) in fulfilling the intention to claim land for the commons. As such they become an ecosystem of common good artefacts with different forms and scales of agency. Their intent, for example, to claim land for the commons in a neoliberal city was much more complex and unknown than producing a functioning living room to inhabit. Their functionality came from their ability to work collectively as dependent things mobilized by human action to claim collective rights within neighbourhoods. Their functionality was dependent on them being relational, co-operative, and collaborative. The cultural commons can become the environment where common good systems can be imagined and their production strategized. Each cultural common good had power in its own right which, once scaled up as part of a collective network of actants, produced a pool of cultural common resources for a neighbourhood. Finding the appropriate scale for the common good network to give artefacts optimum disobedient functionality as a pool of cultural resources influences its effectiveness to produce a new system. It is important to note that the interaction between commons values and neoliberal values are full of friction even at community level. This came to the fore when it was time for me to transfer the ownership of the common goods to the community, which required rules of engagement that had not been set up during the informal collaborations of the initial research phase.

Rules of engagement that are designed on the basis of a culture of reciprocity, generosity, and respect and on a relational ethics of care can embed commons culture locally, which in a neoliberal context is in

stark contrast to one that is transactional, hierarchical, and self-interested. In other words, if rules of engagement are formulated to foreground the relational ethics of care (where all actants are in ethical care relationships with each other), then these become the social contract. Upon reflection during the latter stages of the research, it became clear that rules of engagement should be introduced early on, with relational ethics designed at the intention stage of the research method. As a result of this reflection, rules of engagement are now considered in the early stages of my ongoing practice, making the transfer of common goods into a collective pooled resource smoother and less antagonistic. Over time, this ethical position sets the culture of relationships within the network. The challenge lies in formalizing these rules in written and signed contracts (because the formality lies in contrast to the informal nature of the commoning practice).

To create objects with agency as actants, methods of production such as DIY, collage, and bricolage were found to offer less specialized and more democratic making practices whilst being relational in nature. These relational qualities started from the consideration of raw materials (whether they were re-use of surplus materials or locally found) to how such images and objects are arranged together relationally to construct the new meanings. Experimentation and experiential production whose intent is in caring relationships trump high crafts with extraordinary skills. This form of production offered time and space to reflect and think in action, with no pre-set blueprint of taste or expertise. The intention of this method of making as connecting is not the visual aesthetic of the final product but the convivial and caring relationships that the production process produces. Slow, relational modes of production and making allow for the deliberation of human emotions. The limitations of these techniques were time and scale. So far, cultural common goods have been articulated as empowered non-human objects engaged in a network of social relations that produce them. A common good such as 'The Common Room' was framed as a cultural resource whose occupation of land as direct action positioned it as an actant with agency. This direct action challenged the hegemonic forms of enclosure, slowed down the possibilities of privatization, and enabled new imaginaries and practice forms to be created. In that sense, any cultural artefact/resource collectively produced to address forms of injustice that considers

reciprocal relations of agency for both human and non-human actors could be framed as a common good object.

Conclusion

This chapter tried to establish the conceptualization of a ground up commons sphere independent yet co-operative with the public (state) and the private (market). As cultural practitioners it positioned cultural common goods as components that make up pooled cultural resources. It set out methods in the production of common goods and their labour practices as self-determined and concrete. When cultural objects are mobilized through design interventions where they enable social and political agency, they are understood as cultural common goods. When these goods became part of a network of actants that are pooled to give collective agency to a community of practice, they construct the cultural resources of a cultural commons. Cultural and material resources in this research mediated the world of social relations through objects and images. My research findings show that by treating cultural resources as common goods, a system of objects can develop within the commons that focuses on care, trust, empowerment, and resilient civic commitment as its constituent parts. In general, the lack of distinctions made between the common good and the public good meant that commons cannot be developed based on their own constituent logic and identity. Furthermore, producing cultural commons that operate in a material system that considers relations of power, care, labour, and collaboration can produce new social, political, aesthetic, and power relationships. Although cultural commons can be created by any cultural practitioner, doing so as a rigorous and critical practice requires design input, especially when it came to their social contracts and governance. Because of this, I applied design thinking to conduct my research and develop by methods. This included designing forms of engagement in events, organizational design, design interventions, and systems design of learning infrastructures. I also applied design thinking to the tangible making of props, reports, structures, and furniture. The commons sphere requires many practitioners to engage and design new systems, institutions, and practices, allowing this space to offer new potentials for collaborative research and innovation.

From Rhetoric to Realpolitik: The Optimism of Design Commons Discourse

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Commons and commoning have become distinct analytical and strategic devices for designers working with (and sometimes as) activists in social change.[1] This is salient in various arenas where design practitioners operate, such as the urban commons or digital commons. Urban commons refers to the collective maintenance of urban spaces, sustaining their ecologies, and defending them from privatization;[2] the digital commons involves efforts that range from maintaining free and open access to knowledge, information, and cultural production, to self-organizing the socio-ecological collaborative design of open hardware and software.[3] In these design settings, social groupings engage in commoning, 'the social practices and traditions that enable people to discover, innovate and negotiate new ways of doing things for themselves'.[4] Academic design research on/with groups in the wild often adopts commons framings to differentiate from market-oriented service design: that is, as a community-oriented process articulated as autonomous, relational, situated, and locally sensitive.[5]

Given the origins of commons thinking in Elinor Ostrom's foundational principles,[6] where natural resources are to be managed and maintained as collective actions according to polycentric governance, commons as a framework or organizing entity thereby offers promising socio-ecological alternatives to market or state systems of provisioning, and—in turn—commoning is the necessary ongoingness of various mechanisms and rules developed by a community to sustain resources that are vulnerable to social dilemmas.[7] Nevertheless, design research on urban commons and 'The Right to the City'[8] does not necessarily or consistently centre ecological concerns or our embeddedness in urban webs of life, and digital commons are not scarce resources but are rather 'constructed by people

1. Andrea Botero, Sanna Martilla, Giacomo Poderi, Joanna Saad-Sulonen, Anna Seravalli, Maurizio Teli, and Frederick M.C van Amstel, 'Commoning Design and Designing Commons', *Proceedings of the 16th Participatory Design Conference,* Vol.2., Manizales, Colombia, 15–20 June 2020: 178, ACM, www.doi.org/10.1145/3384772.3385162.
2. Martin Kornberger and Christian Borch, 'Introduction: Urban Commons', in Christian Borch and Martin Kornberger (eds.), *Urban Commons: Rethinking the City*, Routledge, 2015, 1–21.
3. David Bollier and Silke Helfrich (eds.), *The Wealth of the Commons: A World beyond Market & State*, Levellers Press, 2012, 5. Peter Linebaugh, *Stop Thief! The Commons, Enclosures, and Resistance*, PM Press, 2014, 16–23.
4. Bollier and Helfrich, *The Wealth of the Commons*, 11.
5. See e.g., Anna Meroni and Daniela Selloni, 'Commons, New Commons, Urban Commons', in *Service Design for Urban Commons,* Springer, 2022, 3, www.doi.org/10.1007/978-3-031-06035-9_1.
6. Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, 1990, 182–216. Charlotte Hess and Elinor Ostrom (eds.), *Understanding Knowledge as a Commons: From Theory to Practice*, MIT Press, 2006, 3–26.
7. Hess and Ostrom, *Governing the Commons*, 5–6. Botero et al., 'Commoning Design', 179.
8. Henri Lefebvre, *Le Droit à la Ville*, Anthropos, 1968, 34–35.

from scratch'[9] while involving real bodies and materials, enabled or inhibited to act.[10] Such slippage and slipperiness with regard to contents and process—what is to be 'commoned' and how—is an ongoing concern in academic research and practice, which is why we seem to need to revisit commons as a topic of design again and again. Moreover, feminist, decolonial, and Marxist critiques of commons scholarship see its conceptualization as vague or contradictory and its emphasis on governance as reductive, unencumbered by considerations of class or obdurate patriarchal trappings.[11]

We refer particularly to the quasi-institutional, cross-border, often self-organizing collective actions in which we often find ourselves immersed, as (white European women) design academics. We play roles as researcher-observers, design intervention organizers, and activists in networks and initiatives, from academic listservs to online groups to place-based participatory projects. We see messy tensions related to the production of commons discourse in design academia, stemming from politicized framings,[12] means and ends, and the occasional inability of design research to recognize itself as part of the problem. We aim to illustrate how design discourse tends to reify the commons as a utopian site of potentially emancipatory ways of living that can, in fact, render them as designs from nowhere.[13]

In practice, commons are always in movement, even ephemeral, fraught with internal struggles often leading to their disintegration, which is as yet under-appreciated and under-addressed in design studies. Grassroots design activist communities committed to providing positive socio-ecological and anticapitalist economic alternatives have aligned to commons framings to support their work,[14] yet fail to sustain commons they purportedly valued and maintained.

9. Marek Korczynski and Andreas Wittel, 'The Workplace Commons: Towards Understanding Commoning within Work Relations', *Sociology* 54:4, 2020, 713.
10. Giacomo Poderi, 'The Subjects of/in Commoning and the Affective Dimension of Infrastructuring the Commons', *Journal of Peer Production* 14 May 2020, 32.
11. Lauren Berlant, 'The Commons: Infrastructures for Troubling Times', *Environment and Planning D: Society and Space,* 34:3, 2016, 393–419, www.doi.org/10.1177/0263775816645989; Stefano Harney and Fred Moten, *The Undercommons: Fugitive Planning and Black Study*, Minor Compositions, 2013, 50; Órla O' Donovan, 'Conversing on the Commons: An Interview with Gustavo Esteva—Part 1', *Community Development Journal,* 50, July 2015, 529–534, www.doi.org/10.1093/cdj/bsv013; Órla O' Donovan, 'Conversing on the Commons: An Interview with Gustavo Esteva—Part 2', *Community Development Journal,* 50:4, October 2015, 742–752, www.doi.org/10.1093/cdj/bsv014.
12. Sharon Prendeville, Pandora Syperek, and Laura Santamaria, 'On the Politics of Design Framing Practices', *Design Issues* 38:3, 71–84.
13. On 'designs from nowhere', see Lucy Suchman, 'Located Accountabilities in Technology Production', *Scandinavian Journal of Information Systems* 14:2, 2002, 94–99.
14. Bianca Elzenbaumer, Valeria Graziano, and Kim Trogal, 'The Politics of Commoning and Design' in *Proceedings of DRS2016: Design Research Society: Future-Focused Thinking* —Vol.10, Brighton, UK, 27–30 June 2016, 4006, www.doi.org/10.21606/drs.2016.614.

The tendency to focus either on the shared resources or more on the social processes of commoning ultimately appears to sustain a nature/culture split that reproduces patriarchal practices against a coherent articulation of commons that are always about resources and relations *together*, means and ends. These oversights mean that the real issues being played out within commons groups (e.g., fascist attacks on Trans rights or attacks on the legitimacy of structural racism) are neglected in design commons discourse and thus the struggle for commons that might act in support of new lived ecologies appears idealistic or absent.

In other cases, even the proceduralism of governance espoused in design commons activism is eschewed or corrupted, resulting in power wars, leadership grabs, and participants falling prey to cultish, intolerant, or abusive online behaviours, as we have observed in our own cases and elsewhere.[15] Similarly, design academia continues to be plagued by patriarchal, exclusionary practices despite idealistic espousals of commons-adjacent feel-good, all-inclusive values, from formal institutionalized routines of publishing and career promotion gatekeeping, to the differently invisible bullying and intimidation that occurs on social media and informal communication platforms.[16] We thus see how commons framings are easily adopted for analyzing and communicating about things 'out there' while actors fail to recognize the anti-commoning consequences of their own actions, resulting in a conceptualization of commons and commoning that is often depoliticized or irrelevant to dealing with urgent abuses of design commons.

As commons are intimate to care and ecologies, these issues we observe in commons practices readily speak to our long-term and shared collective socio-ecological responsibilities. Whilst we invoke commons as a site of care and responsibility, an act of leadership of a hopeful form, such claims also present counter-intuitive questions pertaining to concepts and practices of commoning. Asserting that the governance of commons necessitates forms of responsibility—checks

15. Dawn Nafus, 'Patches Don't have Gender: What is not Open in Open Source Software', *New Media and Society* 14:4, 2012, 671–674, www.doi.org/10.1177/1461444811422887. Cindy Kohtala, Jedediah Walls, and We-Left Collective, 'Designing Care and Commoning into a Code of Conduct', in *Nordes 2019: Who Cares?,* Espoo, 2–4 June 2019, 2, www.doi.org/10.21606/nordes.2019.032.
16. One of several examples pertains to a protest hashtag #designsowhite that began to be used in the audience feedback software during the Design Research Society conference in 2018 and was visible on Twitter and onstage during the Debate 3 event 'Whose Design?: Sharing Counter Perspectives on Dominant Design Gazes'. It was explicitly mentioned by moderator Andrea Botero with debate participants Sadie Red Wing and Arturo Escobar. For design research email list politics, see Clive Dilnot, 'Nine Swallows—Perhaps Summer? The Last Two Decades of Design Studies', *The Design Journal,* 20:2, 2017, 176, www.doi.org/10.1080/14606925.2017.1282234.

and balances on problematic forms of leadership that undermine their existence and vitality—shouldn't manifest as rigid frameworks for constructing commons 'from scratch' at the behest of listening to community practices that already exist. The question then becomes: How can we negotiate tricky and often ambiguous questions about practices of commoning? How do we reconcile the construction of gendered, circumscribed, and artificial spaces of 'commoning' (that appear detached from people's daily lives) with ideals of participation and aspirations for democracy evident in such models for new forms of social co-operation, and in contrast to manifold contemporary empirical examples of commons appropriation and disintegration? To this end, we argue that a combination of naivety and proceduralism renders design commons research as rhetorical in its idealism whilst also displaying excesses of pragmatism that seem only to conceal power politics in practice. This comes into stark focus when juxtaposed with the uncommoning practices at play in design higher education institutions; this clarity is essential for challenging the abject practices emerging under the auspices of commons framings. We attribute these issues to commons design research having become delinked from critical traditions, which necessarily sit at the heart of a feminist embodied anticapitalist commons practice and an absence of which jeopardizes commons as a site of ecological care.

Design Commons Rhetoric

Feminist scholar of the commons Silvia Federici is unequivocal when she implores that,[17]

...we must be very careful, then, not to craft the discourse on the commons in such a way as to allow a crisis-ridden capitalist class to revive itself, posturing, for instance, as the environmental guardian of the planet....

Nevertheless, in our reading of design commons literature and observations of commoning practices where design/ers are implicated, we observe that Federici's concern is manifesting in design commons

17. Silvia Federici, 'Feminism and the Politics of the Commons', in David Bollier and Silke Helfrich (eds.), *Wealth of the Commons: A World beyond Market and State,* 2012, np, www.wealthofthecommons.org/essay/feminism-and-politics-commons.

discourse. Thus we see the need to identify how and where this depoliticization of commons design research is emerging. In broader fields of study, such as urbanism and anthropology, these concerns have already been played out, with tendencies towards methodological formalism within commons being identified as contrary to the real, and often informal, ways in which communities build co-operation.[18] We observe how this tendency towards formalism and procedures often comes hand-in-hand with a technologist orientation, evident for instance in city experiments in commons transition intimately bound up with smart technologies. Such projects hark of techno-utopian post-work imaginaries that leave out questions of the labour of care. At the same time, the discourse acknowledges that the gendered labour of care and caring sits outside of what can be humanely automated. What then are the methods conceived to manage and what do they automate? In this way these approaches seem to circumnavigate more consequential questions of commons, working bodies, and ecology.

Until recently, the broad gamut of design commons literature has taken the thesis of Ostrom—or the concepts of commons further developed by horizontalist peer-to-peer digital commons advocacy groups—as its point of departure: Ostrom's radical proposition centred co-operation over competition within a masculinist field of economics.[19] This has led to design studies projects on commons emphasizing projects of community composting, gardening, sharing initiatives, or various co-designed and co-made artefacts that espouse certain community values and practices; while these might be anti-capitalist, this is not a given.[20] Often the articulation of these initiatives to wider socio-political contexts—such as the relation to the state—remains ambiguous and de-contextualized;

18. Ida Susser and Stéphane Tonnelat, 'Transformative Cities: A Response to Narotzky, Collins, and Bertho', *Focal,* 66, 2013, 130–132, www.doi.org/10.3167/fcl.2013.660116; Katharina Bodirsky, 'The Commons, Property, and Ownership: Suggestions for Further Discussion', *Focal,* 81, 2018, 121–130, www.doi.org/10.3167/fcl.2018.810109; Andrea J. Nightingale, 'Beyond Design Principles, Subjectivity, Emotion, and the (Ir)Rational Commons', *Society and Nature Resources*, 24:2, 2011, 119–132, www.doi.org/10.1080/08941920903278160.
19. Elzenbaumer et al., 'The Politics', 4006; Floriane Clement, Wendy Harcourt, Deepa Joshi, and Chizu Sato, 'Feminist Political Ecologies of the Commons and Commoning', Editorial to the Special Feature, *International Journal of the Commons*, 13:1, 2019, 1–15, www.doi.org/10.18352/ijc.972; Emmanouela Mandalaki and Marianna Fotaki, 'The Bodies of the Commons: Towards a Relational Embodied Ethics of the Commons', *Journal of Business Ethics*, 166:4, 2020, 745–760, www.doi.org/10.1007/s10551-020-04581-7.
20. In their article 'Commons Against and Beyond Capital' George Caffentzis and Silvia Federici answer the question 'what is an anti-capitalist commons?' conveying how commons initiatives that are reliant on market or state or which are simply about managing resources à la Ostrom cannot be anti-capitalist. George Caffentzis and Silvia Federici, 'Commons against and Beyond Capital', *Community Development,* 49:1, 2014, 92–105, www.doi.org/10.1093/cdj/bsu006.

this is, however, a prominent debate and indeed essential for getting to the heart of commons politics and theory more broadly. For example, George Caffentzis and Silvia Federici cite the UK instance of prime minister David Cameron's 'Big Society'[21] (a programme that encourages people to volunteer to create 'social value', compensating for the effects of cuts made in social services) as a co-optation of commons by the state, which leads to the lay-off of public servants and the reduction of the welfare state overall. Whilst design studies' tendency to ignore wider socio-political contexts are likely symptomatic of design research reporting conventions (where broader implications relating to power, intersectionality, class, and political economy ultimately become diluted or edited out for word limits, or are deemed irrelevant to the design project at hand), they indicate (if this is convention) what design academia safeguards as worth reporting. This is an issue we will discuss later with regards to design studies gatekeeping and patriarchal guarding of an abstract and universal ideal of Design Knowledge.

Meanwhile, feminist scholars identify Ostrom's response to retool commons governance models as rationalistic, economistic, and failing to account for dimensions of commoning that sit at the core of insulating commons from a capitalist market logic.[22] By economizing commons, Ostrom is said to be at odds with an onto-ethical position on commons, by virtue of the disciplinary segmentation inherent to her commons resource management approach that is critiqued for sustaining a link with Western knowledge systems, thereby undermining commons as anticapitalist praxis.[23] This would imply that segments of commons design research too fail to break with Western onto-epistemological hegemony of a belief in the individual, science, the economy, and the real.[24] This is consequential because, as queer theorist Erik Stanley posits, the commons is transformative not as a 'suture' but only as a 'rupture'.[25]

21. The 'Big Society' programme represents an ideological break with the tradition that Margaret Thatcher initiated in the 1980s when she proclaimed that 'There is no such thing as Society'. It 'instructs government-sponsored organizations (from day-care centres, to libraries and clinics) to recruit local artists and young people who, with no pay, will engage in activities increasing the 'social value', defined as social cohesion and above all reduction of the cost of social reproduction'. (Caffentzis and Federici 2014, 197).
22. Clement et al., 'Feminist Political Ecologies', 2; Federici, 'Feminism', np. Caffentzis and Federici, 'Commons against and Beyond', 101.
23. Sarah A. Radcliffe, 'The Shrinking Commons and Uneven Geographies of Development I', in Ash Amin and Philip Howell (eds.), *Releasing the Commons: Rethinking the Futures of Commons,* Routledge, 2016, 126–144.
24. Arturo Escobar, *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*, Duke University Press, 2018, 83.
25. Erik Stanley, 'The Affective Commons: Gay Shame, Queer hate, and other Collective Feeling', in *GLQ: A Journal of Lesbian and Gay Studies*, 24:4, 2018, 489–508, www.doi.org/10.1215/10642684-6957800.

A second strand of design commons research provides a more fruitful understanding of commons as a political and relational ethical practice.[26] This body of work speaks to the necessarily feminist and anticapitalist practice of commoning by emphasizing social relations as the centreground through which anticapitalist struggle is fought, the bodily formation of 'bonds' of community forged through shared struggles.[27] In this heritage, commons is not simply a mode of collaboration through which we can build synergies and share participatory practices but commons *is* the reproduction of social value against capitalist modes of enclosure that are characterized by complexity and intractability.[28] For instance, the work of Maurizio Teli and colleagues[29] conceptualizes commons in relation to contemporary understandings of platform capitalism. Elzenbaumer and colleagues' 2016 paper track at the Design Research Society conference aimed to reconstitute the political dimensions of commons design research emphasizing distinctive conceptions of commons and the consequences thereof. Similarly, the 2020 workshop by design researcher Andrea Botero and colleagues has homed in on the consequential fact of this intractability, by speaking of commoning as a way of being predicated on community practices and articulating critical traditions of commons. Here, we continue to elaborate an understanding of design commons away from the tradition of Ostrom and specifically towards radical feminist, queer, and Black scholarship.[30]

The scholars from whom we draw identify an overemphasis on governance within the commons literature that is reductive to commons as embodied, aesthetic, or affective communities. In critical feminist scholarship, commons are first and foremost an onto-ethical condition, a way of being, irreducible to widespread invocations of proceduralized and often digital commons, which Federici points out as the gender-dividing line in commons scholarship.[31] Several scholars have developed concepts that already speak to such dilemmas and

26. See for instance Elzenbaumer et al., 'The Politics', 4005; Botero et al., 'Commoning Design', 179; Poderi, 'The Subjects', 31–32.
27. Federici, 'Feminism', np.
28. Miguel A. Martínez, 'Urban Commons from an Anti-Capitalist Approach', *Partecipazione e Conflitto*, 13:3, 2020, 1390–1410.
29. Maurizio Teli, Peter Lyle, and Mariacristina Sciannamblo, 'Institutioning the common. The case of Commonfare', in *PDC 18: Proceedings of the 15th Participatory Design Conference, Vol.1.*, in Hasselt and Genk (Belgium), ACM, 20–24 August 2018, 1, www.doi.org/10.1145/3210586.3210590.
30. For feminist, queer, Black, and decolonial c/f: Stanley, 'The Affective Commons', 497; Harney and Moten, *The Undercommons*, 30; O' Donovan 'Conversing on the Commons' Part 1 and 2; for affective and embodied commons c/f: Berlant, 'The Commons: Infrastructures', 397–399; Mandalaki and Fotaki, 'The Bodies', 745–746; Poderi, 'The Subjects', 31–34.
31. Federici, 'Feminism'.

complexities at the heart of commoning, which we draw upon in this chapter, such as Stefano Harney and Fred Moten's undercommons, Mario Blaser and Marisol de la Cadena's un-commoning, Erik Stanley's anti-commons, or Lauren Berlant's affective commons.[32] In doing so, we aim to recentre a feminist heritage in design commons theory and practice to overcome sometimes naïve or overly formalistic and ultimately patriarchal modes and practices of knowledge production, from which modernist design studies has emerged and that we observe in commons design studies too.

Commons Realpolitik

In our combined experiences of establishing, participating in, and researching commons and working with organizations employing commoning practices, commons are proceduralized and promoted as a 'means' for working collectively and making decisions. This results in design guides, protocols, methods to mobilize, and so on—procedures that often appear to reproduce ideas of 'individual contributors' and ultimately come to act as ends in themselves, where the actual experience of participating becomes paramount. Even if this experience can be the basis of the meaningful production of social value, more often than not it emphasizes *being* together over *doing* together, and productive activity tends to dissipate and groups are disbanded, especially in an attention economy.

This observation is consequential for several reasons. It appears to institute procedures and processes as proxies for relations and often the management of resources as commons never actually materializes, which together undermines the possibilities of commons.[33] In the context of open-source sustainability design activism, for instance, a sphere within which both authors have been active, the development of community process seems pervasive even while this seems not to achieve the self-determined objectives of those communities. Paradoxically, in these communities we also observe how through commoning the actual end-results, outputs, or goals become less important, are of lower quality or half-done, while

32. Harney and Moten, *The Undercommons*, 98. Mario Blaser and Marisol de la Cadena, 'Pluriverse: Proposal for a World of Many Worlds', *in* Marisol de la Cadena and Mario Blaser (eds.), *A World of Many Worlds,* Duke University Press, 2018, 18–19; Stanley, 'The Affective Commons', 489–508; Berlant, 'The Commons: Infrastructures', 413–414.
33. Mandalaki and Fotaki, 'The Bodies', 745–746.

the experiential procedure that everyone went through in order to 'common' comes to carry greater meaning.

Furthermore, through this emphasis on process, commons becomes delinked from its political foundations through excessive emphasis on concepts and methods of 'open access, inclusivity, (...) and participatory codesign'.[34] In our observations of an informal student collective experimenting with circularity, renewable energy, urban gardening, and other sustainability oriented material projects as collaborative social learning, for instance, participants placed greater value on learning how to self-organize than on producing tangible, usable projects or learning about ecology and environments—thus severing procedures and interpersonal relationships from the messy work of embedding alternative, anticapitalist, ecological sociotechnical practices in and *as* everyday life.[35] Suffice to say, such experiences are important and we acknowledge the merit of convivial communities and the potential of building a commons movement, yet in many cases such tendencies do not appear to translate to a continuous production of social value or longer-term commons initiatives, likely because the stakes are low for whomever is involved.

In another example of the internal struggles in commoning, Juliet Schor and colleagues examined spaces and communities oriented to free, open sharing, such as a makerspace and a timebank, where several sites saw periods of little or no activity and others found it challenging to recruit new members.[36] Participants were 'consciously attempting to create social relations that reject dominant logics of hierarchy and power', yet exclusionary practices persisted, such as the development of high status members with specialized skills who secured more decision-making power, likely because inequality is pervasive in the larger macro-economy and it is 'difficult to escape in new economic spaces'.[37] In our experiences, these high-status members are often charismatic males who, we also observed, are able to sidestep the procedures assumed to moderate groups allowing them to make unilateral decisions or construct unilateral outcomes.

34. Martínez, 'Urban Commons', 1401.
35. For example, see Philip Hector and Cindy Kohtala, 'Experimenting with Sustainability Education: The Case of a Student-Driven Campus Initiative in Finland', *Local Environment*, 2022, 1415–1430, www.doi.org/10.1080/13549839.2021.1891033.
36. Juliet Schor, Connor Fitzmaurice, Lindsey B. Carfagna, Will Attwood-Charles, and Emilie Dubois Poteat, 'Paradoxes of Openness and Distinctions in the Sharing Economy', *Poetics 54*, February 2016, 66–81.
37. Schor et al., 'Paradoxes of Openness and Distinctions in the Sharing Economy', 78.

Whilst some of these issues arise in naïve contexts, others are more potent cases. The US culture-war discourse around 'free speech' and conservative to far-right denigration of universities in the US and UK as 'woke'[38] have been imported into horizontalist commons groups and amplified by social media. As a result, many 'commons' communities appear to be driven by a need to remasculinize their practices and structures,[39] aspiring to become another ideological entrepreneur in the 'marketplace of ideas',[40] while others are faced with the threat of corporate enclosure on the one hand and far-right recruitment on the other.[41] Such realities betray the observable naïve optimism of the design commons discourse, as it stands.

If we understand commoning as a continuous reciprocal practice that generates social value in the formation of these relations, the accompanying bureaucratization leads us to the crux of the problem insofar as we cannot demarcate what is and isn't outside of this social practice of commoning. In our work, as illustrated above, we have observed how organizations committed to commons invest in formal applied methods, (e.g., holocracy or sociocracy) and also struggle to navigate power dynamics within their organizations because 'slippage' between regulated and unregulated contexts where power plays emerge is persistent and indeed inevitable. Furthermore, a long history of feminist design theory seeks to problematize the construction and enactment of these types of boundary conditions, inside/outside spaces (e.g., public/private). It is important to say that these methods can be meaningful and indeed necessary, and this is *not* to argue against the making and enactment of ethical codes of conduct,[42] or confuse this as a critique of the construction of safe spaces, or for communities to just ***be***, but rather to recentre the feminist foundation and intention that underpinned these deconstruction practices in design from the outset. For example, echoing Susan Leigh Star's infrastructuring or the located accountabilities of Lucy Suchman,[43] the need for

38. Alan Finlayson, 'Neoliberalism, the Alt-Right and the Intellectual Dark Web', *Theory, Culture & Society*, 38:6, 2021, 172–174, www.doi.org/10.1177/02632764211036731; Bart Cammaerts, 'The Abnormalisation of Social Justice: The "Anti-Woke Culture War" Discourse in the UK', *Discourse & Society*, 0, 2022, 09579265221095407, www.doi.org/10.1177/09579265221095407.
39. For example see P2P Left, 'Appendix to the Letter of Disassociation from Michel Bauwens by P2P Left' [online document], 2021, www.p2p-left.gitlab.io/statement/appendix/.
40. Finlayson, 'Neoliberalism', 180–182.
41. Kohtala et al., 'Designing Care', 1–5; Cade Diehm, 'This Is Fine: Optimism and Emergency in the P2P Network', *The New Design Congress* (blog), 16 July 2020, www.newdesigncongress.org/en/pub/this-is-fine.
42. For example Kohtala et al., 'Designing Care', 1–5.

these procedures and practices to emerge from deeply contextualized perspectives within communities is the theory-practice of breaking down boundary conditions. These concepts are concepts for design-in-use that were developed to deconstruct disciplinary or professionalized areas of expertise as a feminist mode of knowledge production. Various theorists of commons understand that commons are not bracketed off from other forms of social co-operation, but rather are diffuse and co-exist (e.g., with capitalism) and understanding this as constitutive of our daily lives seems prescient. Indeed, in Stefano Harney and Fred Moten's expression of the undercommons, the commons is tellingly the site of the 'ungovernable' and is always in danger of becoming 'overcoded' and consequently hollowed out towards its own finality.[44]

Peter Linebaugh's conception of 'commoning' arose from the observation that commons practices were established de facto by commoners, meaning prior to any formalization from outside as established rules or rights. So which practices might constitute meaningful commons is deeply beholden to context and emerges historically from within communities. The pervasive formalistic treatment of commons as procedures and methods reproduces masculinist modes of knowledge production insofar as they are treated as general frameworks to formalize, generalize, and transmit commons and thus represent a 'disembodied construction of the commons'[45] appearing to override the centrality of the everyday as the site of social reproduction. What if, as Linebaugh teaches us, we start by seeing commoning practices as emerging from within communities or our daily lives rather than through frameworks that are overlaid upon them?

Commoning Design Education Institutions

Here, we want to address the above-mentioned issues within commons design research, namely: the gendered construction of bounded commons spaces that construct commons as outside/external spaces,

43. Susan Leigh Star, 'The Ethnography of Infrastructure', *American Behavioural Scientist*, 43:3, 1999, 384–389, www.doi.org/10.1177/00027649921955326; Suchman, 'Located Accountabilities', 94–99.
44. Christoph Brunner and Gerald Raunig, 'From Community to the Undercommons', *Open! Platform for Art, Activism and the Public Domain*, 3 June 2015, www.onlineopen.org/from-community-to-the-undercommons; Harney and Moten, *The Undercommons*, 18, 50.
45. Clement et al., 'Feminist Political Ecologies', 2.

which are characterized by excesses of pragmatism and which dissociate commons from everyday life. This is interpreted based on our observations of a depoliticization of commons design research on account of delinking it from critical commons studies. These issues are interlinked, and both are certainly related to what Paolo Freire teaches us is an 'external' approach to knowledge production, a need to common 'out there',[46] as opposed to within our own institutions as the 'source' of how we can remake our practices of knowledge construction.

We aim to address these issues by developing a critique centred in our own everyday worlds of working within design academia. Our intention is to lay out this critique from a position of reflection on our own research practices, but also as activists/practitioners who have engaged within contexts that we discuss. This is important because it underscores our mode of critique: any demand for socio-ecological transition requires an acceptance of just that (transition) and thus an acknowledgement of our shared fallibility.

This acknowledgement seems all the more necessary when assessing the design optimistic lure of commons that often seems a far cry from the realities of our design academic experiences. This dissonance is also at the heart of Berlant's[47] intrigue with commons as,

...often signifying an ontology that merely needs the world to create infrastructures to catch up to it. Although the commons claim sounds like an uncontestably positive aim, the concept in this context threatens to cover over the very complexity of social jockeying and interdependence it responds to by delivering a confirming affective surplus in advance of the lifeworld it's also seeking...

Such powerful ontological signifiers have also been interpreted as 'epistemic habit'[48] that belies the realities of our own disciplining within the neoliberal universities within which we operate. The instrumental function of various positive or negative affective commons on neoliberal education writ large thus illuminates our design commons predicament. Incisive analyses of the reverberations

46. Dennis Gleeson, 'Theory and Practice in the Sociology of Paolo Freire', *Radical Philosophy* 008, Summer 1974, www.radicalphilosophy.com/article/theory-and-practice-in-the-sociology-of-paulo-freire.
47. Berlant, 'The Commons: Infrastructures', 395.
48. Nina Lykke, 'Academic Feminisms: Between Disidentification, Messy Everyday Utopianism, and Cruel Optimism', *Feminist Encounters: A Journal of Critical Studies in Culture and Politics*, 1:1, 2017, 1–12.

of affective commons have been teased out by the likes of Sara Ahmed through her happiness promise, Terry Eagleton's tragic hope, Erik Stanley's gay shame, or Lauren Berlant's cruel optimism, conveying how rhetorical commons discourses play regulatory affective functions.[49] Relevant to our analysis is design scholar Danah Abdulla's performative positivity and Harney and Moten, whose tragic optimism encapsulates the drive into the undercommons that acts against the 'negligence' that sits at the heart of and which serves to hollow out public education.[50] The potency of these insights is that they reveal the illusion to us: we grasp our contradictory condition as an oscillation between the deflating experience, or in Berlant's terms the 'crisis ordinariness' of academic work, as against the hopeful ideals of the common reproduced through our affective labour.[51] For Harney and Moten, the undercommons is a mode of survival that renders our existence bearable in the unliveable context of pressures and crises of academia. It is both strategy and survival amidst the fraying context of the modernist neoliberal articulations of the university. This function can be reflected onto events in design studies that make for stark juxtapositions between the daily realities of academia, design commons rhetoric, and the problematic practices observable in grassroots design communities.

In recent years, situations have unfolded in design education institutions that exemplify the contradictory narratives at hand and serve to highlight how exclusionary practices continue to corrupt conventional design academia to a point where commons governance principles could provide pointers for positive change. On the one hand, there were hopeful disciplinary ripples felt at the onset of the disturbances to normative regulations during, for instance, the exodus of high profile design scholars from the Royal College of Art (RCA); the calling-out of problematic patriarchal behaviours on digital platforms, social media, and email lists of design academia; the establishment of the Pluriversal Design Special Interest Group (SIG) in the Design Research Society; the appointment of Dr. Dori Tunstall as Dean of the Faculty of Design, OCAD University,

49. Harney and Moten, *The Undercommons*, 18; Stanley, 'The Affective Commons', 491; Lauren Berlant, 'Cruel Optimism', Duke University Press, 2011, 12–15; Sara Ahmed, 'The Promise of Happiness', Duke University Press, 2010; Terry Eagleton, 'Hope without Optimism', University of Virginia Press, 2015.
50. Danah Abdulla, 'Against Performative Positivity', *Futuress*, 21 January 2021, www.futuress.org/stories/against-performative-positivity; Harney and Moten, *The Undercommons*, 18.
51. Berlant, 'Cruel Optimism', 9.

as 'the first Black dean of a faculty of design anywhere'[52]; the special issue of *Design and Culture* on Decolonising Design by the Decolonising Design group; and in the UK context, the success of teaching strikes at the RCA during the UK higher education strikes in 2022.[53]

Still, the latter of those situations also occurred during a time when universities put unparalleled demands on students and workers during the pandemic on account of the immediate need to deliver education through new modes of digital delivery. As the ultimate expression of Harney and Moten's critical/professional academics, we enacted our work days through disembodied experiences of loneliness and responsibility—a shared negative affective commons—that in the guise of Stanley's Gay Shame Queer Hate might otherwise have harnessed that loneliness as an affective common from which to enact different outcomes.[54] In the UK, the pandemic was bookended by strikes in higher education (that at the time of writing are ongoing), during which instances of the use of digital platforms to monitor and discipline behaviours of academics came to the fore, and student rent strikes, lock-ins, and occupations proliferated. In cities worldwide, academics joined or helped organize Black Lives Matter protests and contributed to mutual aid initiatives of all kinds. Perhaps, as Stanley puts it, embodying some collective negativity, anger, or injustice, provided respite from pandemic drudgery. Still, such a take on the events betrays what constituted academic life in the university during a time when edutech and false economies of external market providers proliferated and gained greater footing.

52. 'Chain Letters: Dori Tunstall', *Design Observer*, accessed 4 May 2023, www.designobserver.com/feature/chain-letters-dori-tunstall/39886.
53. Several of the online articles covering the broader context of RCA resignations at the time have since been removed. For The Independent's commentary see 'Royal College of Art in State of Jeopardy', *The Independent*, accessed 22 December 2022, www.independent.co.uk/news/uk/royal-college-of-art-in-a-state-of-jeopardy-as-staff-quit-and-students-protest-a6675941.html. For one of several instances of public call-outs regarding male dominated design studies and its historical neglect of 'race, class, gender, disability, and other axes of inequality': '[SHORT THREAD] I'm glad that Don Norman is finally interested in discriminatory design', Sasha Constanza Chock, accessed 20 December 2022, www.twitter.com/schock/status/1275791897341108225; 'Pluriversal Design SIG', accessed 20 December 2022, www.designresearchsociety.org/cpages/sig-pluriversal-design?fbclid=IwAR2flOJYDeXUyulsXnQ5PbddOuYqMjrgmobLSaXLIemxi-nOOnTjB_Y5cWY.
'Dr Elizabeth Dori Tunstall Appointed Dean of Faculty of Design', *OCAD University*, accessed 20 December 2022, www2.ocadu.ca/news/dr-elizabeth-dori-tunstall-appointed-dean-faculty-of-design; Tristan Schultz, Danah Abdulla, Ahmed Ansari, Ece Canlı, Mahmoud Keshavarz, Matthew Kiem, Luiza Prado de O. Martins, and Pedro J.S. Vieira de Oliveira, 'What Is at Stake with Decolonizing Design? A Roundtable', *Design and Culture*, 10:1, 2018, 81–101. DOI: 10.1080/17547075.2018.1434368; 'Win at Royal College of Art', UCU, accessed 20 December 2022, www.ucu.org.uk/article/12281/Win-at-Royal-College-of-Art.
54. Stanley, 'The Affective Commons', 503.

Whilst the interventions by design scholars that aim to critically spotlight normative practices of knowledge production towards their reform[55] have paved the way to unpack issues in design education systems, practices, and institutions, the institutions under critique seem to emerge largely unreconstructed. We see this evident in our own experiences within design academia, of rampant practices of gatekeeping, wanting modes of critique (fatalistic, pessimistic, moralistic), questionable practices of peer review and editorial overreach, archaic and anti-commons ideas about authorship and the ownership of ideas, and widespread practices of self-regulation, self-promotion, and self-advancement precipitated, in part, by the emergence of new digital publics of design academia. Equally, the daily realities of competition funding, student marketing and recruitment, performance metrics, aspirations for excellence, and the constriction of academic freedoms/curriculum independence are the neoliberal and biopolitical realities that we inhabit.

Elzenbaumer and colleagues' publication *The Politics of Commoning and Designing* at DRS2016 is apposite. Since its publication, DRS has come under intense scrutiny over its practices of review and governance structure and recent commentaries from participants during its 2020 Bilbao event describe and identify experiences as forms of structural violence.[56] The authors' critical intention of reorienting design commons studies seems yet to wholly ring true. Based on our most recent observations of participating in commons design activities, the concept of commons as a 'mode of political action'[57] was often absent. We can only speculate on why this might be, but certainly it seems relevant to reflect on questions of privilege, gender lines, and questions of epistemic (in-)justice.

Similarly, as design-researcher academics trying to establish commons projects, we are faced with institutional frameworks and pervasive

55. See Zoy Anastassakis, Marcos Martins, Lucas Nonno, Juliana Paolucci, and Jilly Traganou, 'Temporarily Open: A Brazilian Design School's Experimental Approaches Against the Dismantling of Public Education', *Design and Culture*, 11:2, 2019, 157–72, www.doi.org/10.1080/17547075.2019.1616917; Dilnot 'Nine Swallows', 165–180; Claudia Mareis and Nina Paim (eds.), *Design Struggles: Intersection Histories, Pedagogies and Perspectives*, Plural Valiz, 2021, 11–18; Elizabeth (Dori) Tunstall, 'Decolonizing Design Innovation: Design Anthropology, Critical Anthropology, and Indigenous Knowledge', in Wendy Gunn, Ton Otto, Rachel Charlotte Smith (eds.), *Design Anthropology: Theory and Practice*, Routledge, 2013, 232–250; Pedro Reynolds-Cuéllar, Claudia Grisales, Marisol Wong-Villacrés, Bibiana Serpa, Julian Iñaki Goñi, and Oscar A. Lemus, 'Reviews Gone South: A Subversive Experiment on Participatory Design Canons: Dedicated to the Memory of Oscar A. Lemus', in *Proceedings of the Participatory Design Conference 2022 - Volume 1*, PDC '22, ACM, 2022, 206–17, www.doi.org/10.1145/3536169.3537794.

56. As discussed by design scholars and participants Lesley-Ann Noel and Ramia Mazé in the design podcast FLUX produced by the Institute for Design Innovation, Loughborough University London, part 1, 2022, www.anchor.fm/idi-podcast.

57. Elzenbaumer et al., 'The Politics', 4006.

market logics that stipulate normative language including information on 'routes to market', or 'market demand' at the point of conceptualization of our design commons projects. A recent project development involved one author navigating the stark contradictions of market logics and sellable IP, which paled in comparison to the need of securing the funding to support a precarious colleague's continuous employment but also to move closer to an eventual goal where several universities might co-operate on a prototype service for alternative education. In this instance too, the author experienced in full how funding frameworks institute individualistic approaches and practices of methodological nationalism[58] and thus structure ways in which it is impossible to build alternative modes of communal practices and understandings. Equally, low student recruitment on novel commons educational programmes renders courses at risk of being closed, making faculty vulnerable and consequently shifting the operative mindset of academics in the face of their own precarity. On the one hand, this context of work provides us with resources and possibilities to construct experiments in new forms of life; on the other hand, this work context regulates the possibilities of these experiments within capitalist frameworks.

In a recent design commons workshop in which one of the authors participated, it became apparent that the dissolution of the community the researchers were reporting on warranted a broader contextualization within global historical contexts (of colonization and occupation up to contemporary forced migration). The researchers themselves acknowledged this point yet continued to pursue a bounded analysis that excluded this influencing factor, so as to meet a seemingly more pressing need to construct a commons model, transmit learnings, and institute a place-based commons. This situation makes for a cogent example of the pursuit of a commons ideal as against the fact of bodies in motion that renders that very ideal incoherent. In doing so it delinked the project from earlier global migrations that the researchers still noted, and from contemporary anticapitalist movements. Such delinking is compounded by institutional gatekeeping within departments ('what does that have to do with design research?'), but also by what research

58. Andreas Wimmer and Nina Glick Schiller, 'Methodological Nationalism and Beyond: Nation–State Building, Migration and the Social Sciences', *Global Networks*, 2:4, 2002, 301.

funding mechanisms target and how funding application review panels are established, which we propose tend to keep design and the digital commons clearly distinct from design for natural resource commons. The ways in which institutions regulate our knowledge of political ecology is exemplified in the intervention by the British government when it banned teaching of anticapitalist content in English classrooms in 2020.[59] Regardless of where one stands on the political spectrum, this is significant, as capitalism, its dissolution or reformation, is at the heart of ecological debates and resource commons.

These are not new insights, but they allow us to consider the dissonance at play between the hopeful ideals of commons design discourse and the messy realities and contradictions that we live by every day. In design academia contexts, including digital public platforms alongside more conventional fora, ideas of commons or commoning would thus be highly meaningful as commoning has to be about coproduction and the placement of knowledge production in something larger than us, the common.[60] Nevertheless, our experiences of attempting to institute commons education and our awareness of the experiences of our collaborators seeking similar goals display the incommensurability and intractability of the project of commoning in higher education contexts. What might our attempts to institute commons in higher education teach us about the wider political challenges of sexism, racism, patriarchy, and commons takeovers in grassroots design activism? If it is inconceivable to actualize commons within this context, what does this tell us about possibilities that exist to common more broadly?

Conclusion

In this chapter, we have argued that an apparent delinking of commons design research from critical traditions reveals to us more consequential questions about our roles and practices as design-researchers interested in questions of socio-ecological transformation. We home in on a design optimistic rhetoric that belies the

59. Jennifer Luff, 'Anticapitalism wasn't Banned in English Classrooms during the Cold War. Why is it Now?', *The Conversation*, 1 October 2020, www.theconversation.com/anticapitalism-wasnt-banned-in-english-classrooms-during-the-cold-war-why-is-it-now-147121.
60. Michael Hardt and Antoni Negri, *Commonwealth*, Harvard University Press, 2009, viii.

realities of our own conditions of affective labour and the contradictions at the heart of our academic lives.

Through our analysis we disclose how a paradoxical combination of idealism and proceduralism seems to render design commons research as both optimistic and rhetorical, which comes into stark focus when juxtaposed with the uncommoning practices at play in design higher education institutions. Perhaps our arguments here are not surprising when they are considered against the backdrop of a now widely observed capacity for design discourse to neutralize and regurgitate concepts in the guise of a progressive idealism. In this way, this analysis perhaps sheds light on broader tendencies of optimistic rhetoric within the design field, of which commons arises as but one incident.

What appears most concerning however is that in design academia, this optimism has meant that we have yet to adequately respond to vital questions about abject practices occurring in grassroots design communities, under the auspices of a commons framing. Our experiences have given us insights into some such practices. Our arguments highlight gendered and artificially constructed and circumscribed designated inside-outside spaces of commoning that appear to reintroduce false constructions of society, and which are contrary to many articulations of a radical commons practice. If we ascribe to the notion of commons as an ontological condition predicated on the formation of bonds of community, is this not a pervasive condition of social life? In this chapter we have sought to redress this by articulating a practice of commoning centred on our own roles as design-researchers and academics working in higher education institutions. Through this articulation, we have attempted to recentre some of the core concerns of the feminist, queer, and Black radical traditions of commons.

What appears at once compelling and confounding is how through commons we seem to be able to envision ways of being collective, yet how this might translate into the context of academia remains ambiguous. This speaks directly to questions of embodiment and ecology: through an articulation of the affective commons we grasp its central illusion and the ways design academia may be rendering a utopian commons as a way to face—to live—environmental and political crises as bounded 'crisis ordinariness' where indeed they are not ordinary.

Tracing the Commons through Clay

Daniela Salgado Cofré &
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In Chile, natural resources such as clay were freely obtained from shared or common areas by small groups of craftsmen and craftswomen in potter communities. However, these areas have been affected by privatization, which has led to the depletion of common lands and consequently of common resources. Despite these displacements of the commons, the resilience of several potter communities facing territorial crises, such as the potter villages of Pomaire and Quinchamali, sheds light on the potential of artisanal resistance to sustain craft production via the design of new political, productive, and material networks.

The collective resilience that emerges from these potter villages is based on their comprehension of the territory, the community, and the soil, which enables them to search for new commons by following the materials. In particular, the artisans—possessing extensive empirical knowledge and usually treating clay and soil as living things—have managed to identify material sources in places that are increasingly distant from where they originally collected clay. Conflicts or frictions usually arise as a result of these current practices of searching and collecting materials; however, we argue that by tracing the commons through the material, these practices present a meaningful approach to the territories and the commons. Thus, we position ourselves closer to New Materialism, which sees matter as invested with vitality or liveliness and acknowledges the potential of material forces to transit and blur the distance between natural and social worlds.[1] In doing so, we move beyond the notion of material from the perspective of modern philosophy—which presents it as something inherently controlled by humans—and we explore how tracing the soil and clay sheds light on the commons, generating sensitive modes for questioning design.

Following New Materialism's epistemic approach that embraces the idea of 'turning to matter', this chapter revisits the practices of potter communities as a method to observe the modifications of the productive commons and their impact in several relations in transition. From there, we reproduce the action of tracing clay in urban

1. Diana Coole and Samantha Frost, 'Introducing the New Materialisms', in *New Materialisms: Ontology, Agency, and Politics*, 1st ed., Duke University Press, 2010, 29; Rosi Braidotti, *The Posthuman*, Polity, 2013, 3.

areas to question the commons and reflect on design possibilities. In line with this, the first part of the chapter presents the historical transformation and struggles of artisans in central Chile using the productive commons—mainly the soil and clay pits surrounding their traditional potter villages. Here, we aim to disentangle how materials mobilize artisans to seek political and economic support for accessing necessary resources or to redesign their practices to find new productive or associative commons. Taking the idea of collecting clay as a way to explore these spheres and nourish design practices for the identification and development of the commons in a highly dense urban periphery, we relocate the tradition of tracing the materials developed by artisans in the city.

The second part of the chapter presents historical and current controversies in the *quebradas* [ravines] of the coastal city of Valparaíso and the transformation of these territories that can be seen as a redoubt of common lands and shared resources in the urban area. These areas have remained as strongholds of a community whereby land ownership is defined by the actors as diffuse and where public and private spheres intersect through the commons. However, urban design and policies have failed to disentangle the logic operating in these places, bringing to the fore the need for proposing other ways of inquiring into these areas. Accordingly, we question how artistic and design experiences might bring new insight for exploring diffuse soils in the metropolis from the material scale to the urban scale.

To do so, the third part of this chapter presents situated design explorations to research the commons performed in the quebradas by a collective composed of design students, architects, and artists. These places are also significant since they bring to the fore the controversies around the modern logic of urbanization applied in Chilean territories. To conclude, we position this way of inquiring into the commons and urban design through materially sensitive practices linked to the currents of New Materialism as a concrete way to take account of the fragilities and relations of things. We reflect on how tracing the materials can deeply nourish pedagogical design practices and opens a mode of challenging the displacement and reductions of the commons. We also enunciate some limitations linked to our work and we highlight potential design actions to be addressed in the future.

Traditionally rural Chilean potter communities freely obtained raw materials such as clay from unrestricted common areas. Small groups of peasants, being deeply engaged in the territory and having broad knowledge about the soil and its properties, learned how to find the pits and extract and process clay. This type of access to resources obtained from clay pits and other lands is referred to as pre-industrial commons or 'productive commons' due to the involvement of intense collective labour and use of the resources[2] and was connected to the earlier Indigenous and agrarian society. Today, the collection of clay from these common areas—understood as private but accessible places with shared productive resources—[3]is threatened by the industrialization of the land, which generates vulnerabilities in the supply of crucial resources for the continuity of handmade earthenware production.

Cases in point are two of the most recognized pottery maker communities of Chile: one in the central region (the village of Pomaire) and one in central-South Chile (in the villages of Quinchamali and Santa Cruz de Cuca). These communities are affected by deterritorialization and the deprivation of common lands and as a result struggle to obtain materials for their livelihoods.

Pomaire is situated between the Coast Mountain—a mountain range that stretches along the coast of Chile—and the Puangue valley, which is shaped by the Maipo river that flows from the Andes to the sea. The main activities that have taken place around the village are agriculture and pottery making, as the lands near the river are fertile and the hills are rich in clay. Pomaire's pottery was originally made to be bartered. The *loceras* [potter women] collected and processed the clay from areas near their houses, creating pots to be distributed and exchanged for food with the peasants or tenants of the neighbouring *haciendas* [estates] in a process called *chaveleo.*[4]

After the 1950s, Pomaire was recognized as an important venue for the development of handicrafts in central Chile and people from bigger cities travelled to the village to buy utilitarian earthenware

2. Emil Sandström, Ann Kristin Ekman, and Karl Johan Lindholm, 'Commoning in the Periphery – The Role of the Commons for Understanding Rural Continuities and Change', *International Journal of the Commons*, 11:1, 17 March 2017, 508–31, www.thecommonsjournal.org/articles/10.18352/ijc.729.
3. Elinor Ostrom, *Governing the Commons: The Evolutions of Institutions for Collective Action*, Canto Classics, Cambridge University Press, 2015.
4. Hernán Bustos, *Historia de Pomaire*, Grafhika Impresiores, 2012, 58.

characterized by its red colour. Today, ninety percent of Pomaire's inhabitants are connected to pottery making, and more than two hundred and thirty families work in the production of objects and in their commercialization.[5] The community has been able to sustain its legacy in the manufacturing of objects, incorporating more industrial means of production due to the rise in demand but continuing the production of objects deeply associated with the rural world that are symbols of creolization and carriers of national identity.

The pottery of Quinchamali and Santa Cruz de Cuca, characterized by its black colour with white engraved ornaments, has similar origins to that of Pomaire. In both places, women started pottery-making as a secondary activity to support farming, so they created utilitarian pieces to be exchanged through a process that in Quinchamali was known as *conchavo*. Although the initial pottery produced in Quinchamali was exclusively utilitarian and in large formats for domestic use,[6] during the mid-nineteenth century anthropomorphic figures were integrated into the utilitarian pieces, notably the *guitarrera* [guitar player] or other women's figures that were modelled into jars or piggybanks. This anthropomorphic introduction showed an Indigenous influence in the making of vessels that became mixed with the Chilean peasant culture. Thus, the production of the people of Quinchamali has been described as a unique identity phenomenon, marked by maintaining technologies of Mapuche origin, the symbolic character of the pieces, and the control of production mainly through knowledge transmission among women.[7]

Despite distinctions in their production strategies, technologies, functionalities, aesthetic components, and innovations, both potter communities started working with clay because they had the possibility to freely collect the primary material for their crafts from the surrounding territories. In both cases, these territories were used as productive commons since both communities had a long tradition of extracting and processing the clay, influenced by prehispanic potter communities established in these areas long before colonization and the resulting subdivision of land. However, these common resources have become inaccessible and eclipsed by major

5. SERCOTEC, 'Barrio Pomaire', Video, 2017, www.sercotec.cl/barrios-comerciales/barrio-comercial-pomaire-melipilla/.
6. Bernardo Valenzuela Rojas, *La Cerámica Folklórica de Pomaire*, Universidad de Chile, 1955, 47.
7. Sonia Montecino, *Quinchamalí: Reino de Mujeres*, Centro de Estudios de la Mujer, 1986.

shifts in the local economy, which has led to the depletion of common lands and of productive commons in both communities.

In Pomaire, the potters recall the times when they had access to clay in the areas close to the village. The old loceras extracted the clay from the land around their houses or climbed La Cruz hill—a small hill characterized by the modelling properties of its clay. After removing the clay with pikes, the loceras would take the earth to their homes and process it by moistening the clay and stepping on the lumps until they were soft. Even if the lands around the village were privatized after colonization, they were managed as common lands. This unrestricted access was possible because the *hacendados* [landlords] owned vast plots of land and were mainly focused on cultivating the fertile fields of the valley rather than the more acidic soil, leaving the hills open for clay extraction.

Fig. 1: The extraction of clay with backhoe, at 35 km from the village of Pomaire, 2019. Photo: Daniela Salgado Cofré & Álvaro Mercado Jara.

The hills around Pomaire (Fig. 1) underwent a process of subdivision, urbanization, and agricultural policy shifts that maximized efficiency,[8] all of which grew exponentially throughout the last decades. These lands became unreachable following the territorial division of the valley into plots of land. At the same time, most of the mountains surrounding the town are now planted with monoculture crops, mainly avocado trees. As a result, it is no longer possible to extract clay from the village's nearby mounds.[9]

8. Daniela Salgado Cofré, 'Contemporary Frictions in Traditional Artesanías: Transformations and Controversies in the Making of Pomaire's Pottery Production', Université Libre de Bruxelles, 2022, 216.
9. Ximena S. Valdes and Paulina Matta, *Oficios y Trabajos de Las Mujeres de Pomaire,* CEM (ed.), Pehuen Editores, 1986, 78–79.

The same phenomenon of deprivation of the productive commons occured in Quinchamali and Santa Cruz de Cuca, where after many years of a craft-making tradition, most potters feel their livelihood is threatened by their dependence on the soil and their lack of accessibility to clay. Big and small forest industries are enclosing sites where clay pits are located for growing trees and processing timber and pulp. This vulnerable situation led the community of potter women, together with the Chilean Ministry of Cultures, Arts, and Heritage, to request the inclusion of these potters on the List of Intangible Cultural Heritage in Need of Urgent Safeguarding by UNESCO. In this line, the expectations of the Quinchamali potters are high: they look forward to achieving this recognition for the community, but also because it might be a fundamental step towards securing their heritage by guaranteeing access and protection to the old common lands and to their productive commons.

Nevertheless, the impact of the various environmental, political, and economic phenomena that led to modifications in the uses of the soil (i.e. the displacement of common areas of material supply) generates organized and even subversive practices for extracting clay from areas that are no longer accessible. In Quinchamali, artisans permanently trace new clay pits in the surrounding lands, even if they trespass to search and collect clay for their production.[10] In the case of Pomaire, some artisans have redesigned clay routes and recollection practices, setting up groups that seek new sites for material supply far from their village. The collective resilience that emerges from these potter villages—which are not free from conflicts—requires a sensitive comprehension of the territory, the community, and the soil. It enables the search for new productive commons by following and working with clay as a lively matter, being part of a more extensive network of interconnection. The manner in which these artisans have dealt with the material when facing territorial displacement resonates with New Materialism, seeing clay as an actant,[11] as a source of action—something that produces an effect and has agency. This approach sheds light on how tracing clay as an actant opens the way to seek the political

10. Cultura PUCV, 'Alfarería de Quinchamalí: Victorina Gallegos. Unión de Artesanos de Quinchamalí', [Video], 2021, www.youtube.com/watch?v=pDq9CIRGnIs.
11. Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory*, Oxford University Press, 2005.

recognition of materials as the heart of these communities' identities or to design new practices.

The material processes developed by these artisans—interweaving crafting practice and territoriality—encouraged us to question the historical modernization of the territories. We asked ourselves how tracing clay could also inform the modifications of the productive commons beyond rural areas and when dealing with urban processes. Our starting point was thus in the coastal city of Valparaíso, where various conflicts leading to the loss of the commons are linked to a modern urbanization logic, often criticized by the New Materialisms for embracing an inert notion of the soil that rejects its material agencies. We situated ourselves in the quebradas of Valparaíso: diffuse areas constituting an urban periphery inside the city that are a redoubt of the commons. From there, as we will present in the following sections of this chapter, we propose to develop experiences for tracing clay as a mode to nourish the process of learning and designing from the soil.

The Remains of the Commons in the Quebrada of Valparaíso

In 2003, the city of Valparaíso was declared a UNESCO World Heritage Site, considered emblematic of the early phase of globalization in the late nineteenth century, when it became the leading merchant port on the sea routes of the South Pacific coasts. Almost twenty years after this declaration, there is growing tension concerning how local institutions have mismanaged the city's heritage despite the economic support for safeguarding its industrial and cultural legacy. Similarly, criticism has arisen regarding the protection strategies that excluded the cultural landscape created in the quebradas of this city. While the main narratives of Valparaíso focus on the hills and the downtown area—historically inhabited and urbanized by the elite and the middle classes—the quebradas have been stigmatized. Nevertheless, the quebradas constitute a unique urban fabric in Latin American cityscapes, raised through a vernacular adaptation to the topography where family houses and the common uses of the soil constituted communities, a morphology that today represents the 'counter-landscape' of a UNESCO zone.[12]

12. Camila Hernández, 'Imagen Urbana de Valparaíso: Entre Patrimonio, Puerto y Turismo ¿Qué Queda?' *Revista Geográfica de Valparaíso* 51, 2015, 95–111.

The quebradas are shaped by the hilltops (or extra ravines)[13] and the slopes that descend to water streams and then to the sea (or intra ravines).[13] These second spaces are where most popular classes live and where 'ownership' and land uses are highly diffuse. The intra ravines are generally composed of green areas, spaces of *toma* [redoubts of informal occupation], monoculture crops (eucalyptus trees), and urban dumps. However, these hilly soils comprise places of commonality, as this urban-rural soil has not been privatized and subdivided into parcels (i.e., 5000 m2) like most other urban peripheries and hinterlands (Fig. 2).

Fig. 2: Valparaíso dense urban pattern shaped by the topography of the ravines. At the bottom part of the image, the parcels of Laguna Verde are projected in regular lots of 10000 m2 for speculative real estate investment. Graph by the authors.

Traditionally, the quebradas in Valparaíso were places of common resources that supplied the inhabitants of the different areas of the city. As illustrated by nineteenth-century enlightened travel writers, the drinking water of the city was provided from the ravines. The *aguateros* [men who transported water in clay pots loaded on mules] pulled the water from the ravine bottoms and distributed it to the families of the hills and downtown.[14] Besides, the quebradas were where the community (owners and tenants) provided themselves with clay and developed the production of bricks and roof tiles

13. Andrea Pino Vásquez, *Quebradas de Valparaíso; Memoria Social Autoconstruida*, Lautaro Ojeda Ledesma and Ximena Galleguillos (eds.), Consejo Nacional de la Cultura y las Artes, 2015.
14. William S. W. Ruschemberg in Roberto Hernández, *Valparaíso en 1827*, Imprenta Victoria, 1927, 143.
15. Hernández, *Valparaíso*, 143.

for their constructions.[15] As the English traveller Mary Graham narrates in 1822, in addition to providing water, the ravine was the resource for creating utilitarian clay pieces[16] such as those used by the aguateros, manufactured mainly by women. In this sense, the quebradas denoted a shared ground regulated and used by common principles over private principles.

Graham also describes with wonder the red clay peaks of the quebradas and the foliage of the native flora, in which pataguas, myrtles, laurels, acorns, peumos, boldos, cinnamon trees, palms, and maitenes formed an extraordinary landscape, new to her. As Hernandez states, this landscape no longer exists due to the massive felling of the native forest for fuel and its replacement by introduced species such as eucalyptus. These transformations of the ravines became more drastic closer to the modern city centre in the flat area, where native nature disappeared entirely as a consequence of the hygienist movement. This process channelled all natural watercourses underground[17] to prevent water irrigation within the basins and redirect it to the sea.

The topographic conditions of the hills and their soil are relevant agents for defining places to inhabit Valparaíso, creating a distinction between those living in the hills and those living in the ravines. This contrast between urban hills near downtown and upper hills facing the hinterland was also established by travel writers of the nineteenth century. The upper hills and the quebradas were continually described as slums, poor, dirty, and informal. This idea permeated, so the less urbanized, sanitized or paved ravines are still considered an enclave of urban poverty. However, these areas also remained as strongholds of a community form in which land ownership is diffuse and where public and private spheres intersect through the commons. Thus, we consider the quebradas as redoubts of the commons, where urbanization programmes have not yet arrived due to the technical complexity required to transform the soil into urban infrastructure and the risk these watercourses represent to the city, where productive and recreational land use is consensual and small ecosystems of endemic fauna and flora continue to coexist despite high environmental vulnerability (Fig. 3, 4).

16. Mary Graham, *María Graham. Diario de su residencia en Chile (1822) y de su viaje a Brasil (1823)*, trans. José Valenzuela, Rufino Blanco-Fombona (ed.), Editorial América, 1916, 183.
17. Luis Álvarez Aránguiz, 'Origen de Los Espacios Públicos En Valparaíso: El Discurso Higienista y Las Condiciones Ambientales En El Siglo XIX', *Revista de Urbanismo* 4: Julio, 2001, 1–22.

Against this background, we propose questioning the commons in today's quebrada, starting from the soil—not only as property but as an element with agency, part of an ecosystem, and a space of vital interdependence. From a non-human-centred ontological and epistemological perspective, we question our positions as beings, our interdependency in a web of life. At the same time, we interrogate the modes of contemporary urban design, posing questions on how to learn from the ravines, these redoubts of the commons often referred to as 'informal', and thus reflect on our relationship with urban land beyond the logic of property and capital.

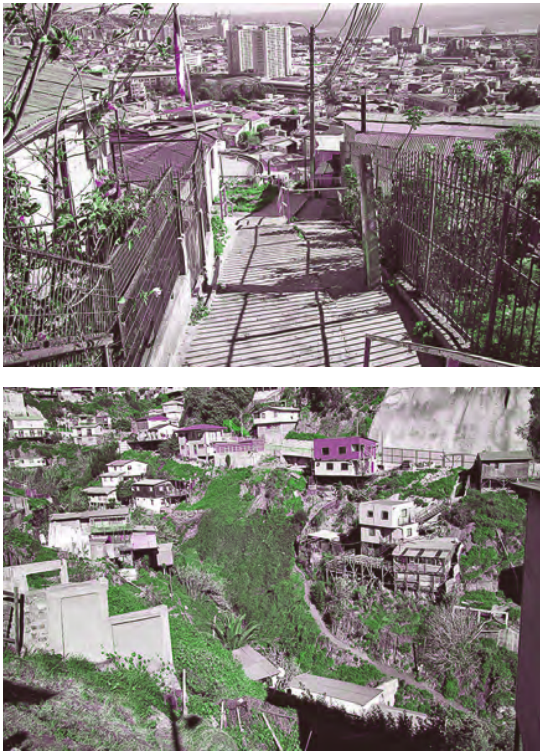

Fig. 3, 4: View of Valparaíso towards the diffuse urbanization of the intra quebrada, 2022. Photo: Daniela Salgado Cofré & Álvaro Mercado Jara.

Tracing Urban Commons through Clay

As a group of artists, architects, and designers with interests in the agency of the soil, we invited a design studio focused on studying the territory in Valparaíso. We aimed to learn from the soil and to

study the commons in the ravines of Valparaíso, mainly those bordering the flat area (Fig. 5) and decided to have situated and sensory experiences through the search for clay in a particular quebrada. Echoing the practice developed by artisans, we focused our exploration on the ravine separating La Merced and El Litre hills, a quebrada that represents a redoubt of the common and green areas, especially after a fire in 2014 that affected these hills in the upper part of Valparaíso. While the first hill is named after the first religious congregation established there, the second is named after a native tree once abundant in the area.

As aforementioned, clay is not considered a material for human creation only, but an agent that also triggers actions and displacement, impacting the environmental and political sphere and opening questions about the productive commons. Thus, in this project, we turned to matter and we traced clay as a means to learn about the use and properties form the soil in the common lands of the ravines of Valparaíso (Fig. 5).

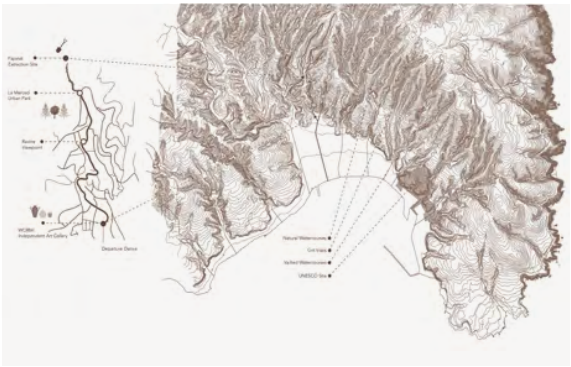

Fig. 5: The design studios inquired into the main watercourses of Valparaíso's quebradas, identifying the urban transformation of these flows into a drainage system. The group decided to explore the ravine that divided the Merced and Litre hills (amplified on the left), 2022. Graph: Daniela Salgado Cofré & Álvaro Mercado Jara.

Taking a New Materialism perspective, we attempted to perform new creative ways to reimmerse ourselves in the pluriversal and heterogeneous material worlds through other modes of seeing, knowing, and acting—something essential, especially for arts and design disciplines.[18]

18. Daniela Salgado Cofré and Álvaro Mercado Jara, 'Going to the Clay: Exploring Conflicts and Values of the Soil in Valparaíso', *Revista GEMInIS* 13:2, June 2022, 81–93, www.doi.org/10.53450/2179-1465.RG.2022v13i2p81-93.

> In this sense, New Materialism allows us to move beyond the anthropocentric approach and enables us

to take a fresh look at the ways in which the non-human has significant and pervasive effects—on a daily basis—upon the social world and on all our lives.[19]

> Besides, this approach challenges more conventional distinctions between subjectivity and objectivity and permits us to overcome the need to structure and represent the social world while making it possible to search for new methods for inquiring about our subject and problems.[20]

Adopting an approach that emphasizes engagement with the material and non-human world, the transdisciplinary group initiated an exploration of the quebrada located between La Merced hill and El Litre hill in Valparaíso. The group performed a dérive,[21] which allowed them to playfully and constructively engage with the forces of the terrain, including material forces, while remaining open to encountering new phenomena. Through this approach, the group aimed to better understand the urban margins and their situation within them. The WORM Independent Art Gallery, situated in the flat area of the city, served as the starting point for the exploration.

From there, we began our dérive of La Merced hill along paved paths along the ravine's edges. In the first segment of our route, the water flows were vaulted and many houses covered the slopes and the ravine. This area presented consolidated urbanization, in which it was not easy to notice green or common areas as everything around us was paved and covered with fences and walls, showing a clear distinction between public and private spaces. As we climbed up the hill, openings began to appear more periodically, making it possible to see other animate organisms, other configurations of spaces, and distinctions of the natural and built environment.

As we ascended, we gained greater visibility of the ravine and observed how some houses or green areas are distributed on its slopes and along the water path that flow at its deepest point. A number of breaks were taken to stop and observe the occupation of these

19. Nick J. Fox and Pam Alldred, *Sociology and the New materialism: Theory, Research, Action*, Sage, 2016.
20. Nick J. Fox and Pam Alldred, 'New Materialism', in Paul Atkinson, Sara Delamont, Alexandru Cernat, Joseph W. Sakshaug, and Richard A. Williams (eds.), *SAGE Research Methods Foundations*, SAGE Publications Ltd, 2020, www.doi.org/10.4135/9781526421036768465.
21. Guy Debord, 'Theory of the Dérive', *Internationale Situationniste*, 2:20, May 1958.

spaces, which showed an order between the social and the material expressed in the configuration of the land use (Fig. 6).

Fig. 6: Drawings from different points of our dérive, 2022. Drawings: Francisca Ortega.

After forty-five minutes, we arrived at Avenida Alemania, an avenue that connects the hills of Valparaíso at the height of 100 metres. We stopped at La Merced Park, a green space at the top of the ravine that marked the end of the planned urban space giving way to diffuse urbanization. In the park, we shared our observations and conversed. The artist who knew about the clay veins shared her wisdom about the material and the place. From a respectful perspective of the soil and its use, she indicated how the colours and textures could show the ground's composition and whether the clay could be modelled. Through these conversations, we exchanged experiences of collaborative learning, discussed the importance of preserving shared knowledge, and emphasized the need to respect the soil and raw materials as key elements in facing collective challenges.

Then we headed up to an area where the ground was no longer paved, an accessible but private place with an open gate and a 'private property' sign, identified by some artists and artisans of the area as a place with clay veins. On this part of the route, the journey was slow as we became more aware of the ground, looking carefully and trying to understand the differences—at the beginning slight and then more evident—that existed between the different soils. There the soil became intensely reddish, moist, and compact.

From sensitive experiencing of the soil, we identified and collected clay to understand its properties and condition. The collection was done by digging with our hands and moulding small clay bodies to test

the material flexibility, binding, and firmness (Fig. 7, 8). However, we were immersed in a space where the relationships established from the soil were vulnerable; for example, we became aware that there were numerous Chilean palms in this area, an endemic species in extinction and protected, while next to them, people felled monocultures of eucalyptus. The collection of clay in a space understood by several actors as a commons, allowed us to observe how the relations of the material world are not stable; they are relational, interdependent, and in constant transformation.

Fig. 7, 8: Collection of clay and properties test in the upper part of the quebrada, 2022. Photos: Daniela Salgado Cofré & Álvaro Mercado Jara.

After collecting clay, we went to the bottom of the creek, following the watercourse and moving along the walking paths traced between areas with endemic vegetation, which are an essential part of the green areas of Valparaíso. These areas are occupied as commons, as they are used by the neighbours to develop leisure activities and for their animals. Along the paths and close to the water flow vaults, we reached this ravine's sand trap.

During our exploration, we stopped at several points and documented the place and the practices through different media, such as drawings, audio, and mapping. We reflected on making visible the relations between humans and non-humans from our experience situated in the ravine—that is, from the ascent, the collection of clay, and the descent to the city centre. Thus, considering our observations, we developed diverse sensitive cartographies to visualize our situated experience and our established relationship with the land and its use in the ravine. For example, a design student created a map displaying the route and the plants found in diverse parts of the quebrada. The design student showed the paths along the dérive and those we followed with wool on a canvas. He made a selection of leaves that he collected during the dérive and used cyanotype on textile to show this information associated with the route, making visible the diversity of species in these diffuse areas (Fig. 9, 10, 11).

Fig. 9, 10: The collection of plants from the ravine, the process of working with cyanotype, 2022. Images: Gabriel Jiménez.

Fig. 11: The final textile sensitive cartography, 2022. Images: Gabriel Jiménez.

Then we returned to the workshop of one artist in WORM and modelled various pieces of clay with the material collected during the exploration. For this process, each of us worked with the soil that we took from the ravine, drying it, grinding it, and straining it until we had a very light powder that we mixed with water to produce a paste. The clay was kneaded until it reached the consistency necessary to model a piece. But we needed to mix different preparations to achieve a better consistency, so we collectively merged preparations made by the group members until we achieved a clay consistency suitable for modelling, which we stabilized with quartz and kaolin. We observed and drew the hand gestures for collecting clay and holding the material as a way to inspire the modelling of the pieces, making small bowls (Fig. 12). After a couple of days, we polished and fired them; this process aimed at understanding the material and its cycles through continuous interaction with its transformation.

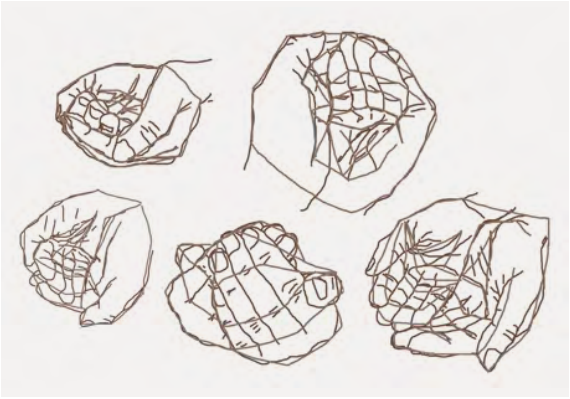

Fig. 12: The process of abstraction of the hand gestures to design a clay pot, 2022. Drawings: Camila González.

While collecting and preparing the material and while designing and executing the pieces, we reflected together on the importance of seeing clay—a material frequently used in the design and production of objects—as an element that, like other materials, allows us to become aware of the tensions and changing relationships around it. Through materiality, we acquired significant knowledge about the community of practice, the context for designing with consideration of the productive cycle, and how this cycle touches even spheres of commons. Furthermore, exploring diffuse soils in the ravines of Valparaíso, where people develop strategies to commoning often in an informal or subversive way, sheds light on the need to design strategies for safeguarding and managing these places and their productive commons, which are usually disregarded. We began to understand how the soil, through different interactions, is an element that enables the creation of the artificial (such as the clay pieces) as well as life itself (such as that of non-humans, like the green plants of the ravines) (Fig. 13, 14).

Conclusion

Starting from the pottery tradition in Pomaire and Quinchamali, and the resilience of these communities when facing the displacement of the commons, we sought to investigate the commons using the collection of clay as a metaphor. In these communities the struggles to find material are contained by the design of new practices,

political actions, and collective resilience. As we have argued throughout this chapter, this material brings to the fore the soil and its uses. The experience of mapping and collecting clay in the quebrada between La Merced hill and El Litre, and the creation with clay, opened up a path of analysis inquiring into the commons and urban design through materially sensitive practices linked to the currents of New Materialism as a concrete way to take into account the fragilities and relations of the soil. At the same time, it allowed us to enter the ravine and observe it as a diffuse urban territory beyond modern paradigms of urbanization such as slums or suburbs, where the public, the private, and the commons are constantly redefined.[22]

Fig. 13, 14: The collective process of modelling in the WORM Independent Art Gallery, and the process of drying different pieces, 2022. Photos: Daniela Salgado Cofré & Álvaro Mercado Jara.

From a forward-looking perspective on urban design, which involves transforming the ravines into 'established' urban areas, we can speculate on the emergence of conflicts because while these spaces are private or state-owned property (as national assets for public use), they also constitute the commons. As we have analyzed through historical narratives and mappings, the ravines are populated mostly through informal family occupations or communal organizations outside the system. Therefore, the ravine today falls outside the typologies of Chilean legislation, which—differently

22. Álvaro Mercado, 'Los Retazos Urbanos de Valparaíso : Reinterpretación Del Ocio Como Práctica Urbana. Urban Patches of Valparaíso : Reinterpretation of Leisure as an Urban Practice', *Revista AUS*, 24, 2018, 34–45, www.doi.org/10.4206/aus.2018.n24-06.

to other countries[23]—does not refer to land for the use of commons. While this might be subject to criticism due to the lack of productive uses beyond recreation, we see the quebradas as a critical subject for design transition since they present a critical contemporary mode for occupying private or public property.

In this line, the exploration described above included the collection of clay in the upper part of the ravine, in a private territory in a state of abandonment on the city's urban edge. Although this space was accessible, we concur with Harvey, who expressed that 'while the public might contribute to the commons, political action is required to appropriate them and make them commons'.[24] Thus, the public and the accessible private require political action of appropriation to make these spaces commons. We used this metaphoric and practical action of collecting the clay to occupy the territory in a sustainable, productive way, more than in a recreational way. Inspired by the resilience of pottery-making communities, who preserve collective knowledge about materials and the land, take political stances in the face of territorial inaccessibility, and share an identity related to the soil, we as artists, designers, students, and architects took a position and experienced using the commons in the quebrada. Our action was guided by a shared understanding of the importance of questioning the uses of the soil through raw materials, and of facing collective challenges through collaborative learning and the preservation of shared knowledge.

Applying materially sensitive practices brought us to address the tensions and changing relationships around the productive commons and the redoubts of the commons. In this regard, we observed how commons are being displaced and usually relegated to peripheries through the collection of clay. While some practices like those performed by artisans find ways to trace and create new commons through reterritorialization, our experience with clay in Valparaíso permitted us to acquire significant knowledge about the network of interconnections to consider when designing new strategies for commoning in the urban environment.

In this regard, we learned about some informal practices of commoning and mapped the uses of the soils usually disregarded. Moreover, performing situated and immersive practice in places where the

23. John Bingham-Hall and Theatrum Mundi, 'Future of Cities: Commoning and Collective Approaches to Urban Space', *Future of Cities, Government Office for Science*, LSE, 2016, 3.
24. David Harvey, *Rebel Cities: From the Right to the City to the Urban Revolution*, Verso Books, 2012, 73.

commons are continuously reduced and displaced opened up questions about these dynamics and reflections on how our actions might challenge these reductions by highlighting the traces of the productive commons in the ravines. While we designed visualizations and objects that might enrich the understanding of the ravines, we believe that at this stage, there are still some limitations to our work. One of the main limitations of our approach is that it primarily focused on our own experiences of questioning the commons. We did not thoroughly explore the ethical questions that might arise from our status as outsiders to the inhabitants of the area. While our actions allowed us to explore controversies and raise awareness of the productive commons in the ravines, we recognize that there is much potential for us to propose design interventions and political actions to manage the productive commons and challenge their displacement. However, we acknowledge that this requires a deeper understanding of the complexities of the quebradas, and the communities inhabiting them, together with a grounded and sensitive approach to our activities.

Commoning Fashion: From Having to Being-With the World

Jennifer Whitty

Jennifer Whitty identifies as an Irish woman and traces her genealogy to Muintir na hÉireann, the native people of Ireland. Her geopolitical positionality has led her to a decolonial process of re-connection and relinking towards a goal of pluriversal literacy, drawing from her own Indigenous Irish culture and that of other worldviews. She is an Associate Professor of Design at Victoria University Wellington (New Zealand). Her work as an educator, designer, and researcher aims to usher in a new era of deep systemic change for global fashion that is expansive and diverse, based on reimagining everyday practices for the commons and for social and environmental justice. Trained at the Royal College of Art (London), Limerick School of Art and Design, and the National College of Art (Dublin), she has worked as an educator and designer in many leading design programmes and companies across the globe. Her various clients include Condé Nast, FutureLearn, United Nations, and The Australia Circular Fashion Conference. Whitty currently lives in New Zealand/USA/Ireland.

We have been conditioned to think that 'fashion practice' only exists at the point of purchase, through the narrow lens of consumption. Fashion practice is about acquisition and hierarchies of class, status, and aesthetics based on buying more and more new items. Sometimes it is easy to forget that this logic based on separation, and being uncommon, is a construct. It is essentially a story made by humans that can and needs to change. This story has upheld a worldview of endless economic growth where our place in the world is humans-as-consumers. Nature and people are distinctly separate from each other, one acting as a resource to exploit for the benefit of a few.

Fig. 1: Jennifer Whitty, Being Uncommon, 2023.

The dominance and power of this story has been taken for granted. Its legacy on our planet is almost insurmountable in terms of destruction and damage on an ecological level. Perhaps even more deeply damaging and insidious is how it has stifled the ability for other stories to be told that uphold very different values of care, of being, of reciprocity, and empathy. As wearers and designers, we are not encouraged or given capability by this system to 'be in common with fashion': a deeply relational practice of being with our everyday clothing, as per a commoning orientation to the world, posited by the activists Bollier and Helfrich.[1] Being in common with fashion is a relational ontology that underlies the

1. David Bollier and Silke Helfrich, *Free, Fair and Alive: The Insurgent Power of the Commons*, New Society Publishers, 2019.

commons and is based on a 'deep relationality of everything'.[2] It could potentially shift the way we see the world as it crosses the conceptual divide between mind and body, body and garment, human and nonhuman: embodied and material, ecological and spiritual. Our capacity for empathy and our ability to care for and be in common with our clothes are curtailed. It serves industry if we don't form deep attachments to a garment—if our relationship is short lived. We are compelled to get excited about the garment, but just enough to move on. Connections are weak and fleeting. (Fig. 1)

The shift to commoning through fashion will require deep work on many levels. Bollier and Helfrich posit that 'commoning'[3] represents a profound challenge to the dominant political and economic systems of capitalism because it is based on a very different ontology or meaning framework. It is a world of dense interpersonal connections and interdependencies based on a deep relationality of everything. We need to improve our ability to tell new stories, to give voice to the stories that have gone untold, to find care and meaning and commonality.

According to Bollier and Helfrich, while commoning is primarily about relationships amongst people in communities, it also encourages creating relationships between the human and nonhuman worlds. Something we all have in common is our embodied experience of wearing clothes. These clothes may look and feel differently but they are our chosen second skin and our interface with the world. The commonality in our being encased in cloth and fabric is a shared potency and rich site for commoning. Our seemingly mundane, unnoticed activity of being in clothes can shift our mindsets to see the potential of commoning everywhere, especially in the everyday, in our mundane interaction with clothing and each other. (Fig. 2)

I have been working in the field of sustainable fashion for over a decade. Over this time, I have become somewhat jaded and disillusioned by much of the mainstream sustainable discourse and proposed approaches—as these approaches tend to perpetuate anthropocentric and technocentric ontological assumptions.

The modernist dualism of mind and body and the naturalist demarcation of human and nonhuman have led to division and detachment and a diminishment of the substance of our everyday life. The Western

2. Ibid, 41.
3. Ibid, 93.

worldview drives a narrative of separateness that Paulo Freire describes in the *Pedagogy of the Oppressed* as an assumption of a disunion and dichotomy between human beings and the world.[4] According to Freire, a person is viewed as being 'in' the world, but not being 'with the world' or 'with others'. This is a subtle but powerful difference: if we do not feel that we are with the world and all its inhabitants—garment workers, our clothes, our rivers, air, and so on—our bond of solidarity is tenuous. A plurality of ideas and perspectives is needed to reframe Western perspectives of knowing, valuing, and being in common with each other, starting with small but potent and potentially disruptive acts of commoning in the everyday habits of wearing clothing.

Fig. 2: Jennifer Whitty, Commoning through fashion creating deep relationality of everything—the human and nonhuman worlds, 2023.

I am a White-Irish woman and my genealogy can be traced to the Muintir na hÉireann, the native people of Ireland—a rich, ancient, and distinct culture that stretches back for more than 10,000 years. The ancient Irish were animists who honoured and revered the force of nature. They believed that nonhuman entities and inanimate objects possessed a spiritual lifeforce. As the first colonial project of the British Empire, Ireland has been colonized for over 700 years; as such, much of the ancient Irish thinking and its practices were oppressed with the advent of colonization and adoption of Christianity.

4. Paulo Freire, *Pedagogy of the Oppressed,* 30th anniversary ed., Continuum, 2000, 81.

This Indigenous wisdom is embedded in my DNA. I have been engaged in a decolonial healing process of re-connecting and relinking to my own Irish culture as well as of pluriversality—learning from and applying other Indigenous knowledge systems and world-views. As decolonial scholar Sabelo J. Ndlovu-Gatsheni posits, 'decoloniality accepts the fact of ontological pluralism as a reality that needs ecologies of knowledges to understand'.[5] Decolonizing oneself is a process of deep learning, unlearning, action, and reflection that begins with a recognition of one's own positionality. Critically questioning the power relations in which one is embedded and the privileged positions from which one is able to speak is necessary in order to unravel and create other ways of being. In my case, in my position as a researcher and educator in a higher education institution, which is based predominantly on settler-colonial understandings of knowledge, this can be conflicting, humbling, and somewhat paradoxical. Re-centring Indigenous Ideologies is a core dimension of decolonization. But the process is arguably more complex, and inherently radically transformational, than Western systems can fully comprehend.

As a holistic knowledge system, the metaphysical flow of Indigenous Knowledges stretches our fundamental ideas of self, knowledge, and our place in the world. It requires a reconsideration of everything we do. How we learn, where we learn, and who we learn with, as it often goes beyond institutional academic spaces. As I have learned, in order to understand and learn to apply Indigenous knowledge, especially if it is from outside one's own culture, it is essential to adopt a posture of not-knowing and humility. One learns not to establish truth, but to seek a pluriverse of truths. To recognize the limits of what we don't know; to know where we can go. When we work with Indigenous Knowledges, we have a duty to work with this knowledge and Peoples in ways that are culturally appropriate. In the Aotearoa, NZ context, there are well established tikanga, or protocols, for non-Māori/Pākehā to engage with decolonization, listening to, and respecting Māori being central. It is not about trying to be Māori, but as Treaty educator Jen Margaret says, 'we (non-Māori) need to become more Māori'.[6] As non-Māori, it is significant that I make the distinction clear

5. Sabelo J. Ndlovu-Gatsheni, 'Decoloniality as the Future of Africa', *History Compass*, 13:10, 2015, 485–496.
6. Jen Margaret, 'Becoming "really Pākehā"' *E- Tangata*, 8 December 2019, www.e-tangata.co.nz/reflections/becoming-really-pakeha/.

that I am integrating Māori values and other Indigenous knowledge into my work, rather than claiming to 'have' *mātauranga Māori* [Māori knowledge] myself.

This chapter asks: Can we be 'in common with' our clothes by listening and being with them? Being in common with our clothes is an embedded relational practice that crosses the conceptual divide between mind and body, human and nonhuman: embodied and material, ecological and spiritual. The commons worldview opens up new possibilities for change, to create value in new ways, and to create meaning for ourselves in the process. We can escape from capitalist value chains by creating value networks of mutual commitment. It is by changing the micropatterns of social life, on the ground, with each other, that we can begin to decolonize ourselves from the history and culture into which we were born. Can this practice and experience of communing with our clothes be shared with others to open a new dialogue of understanding. Can this practice lend itself to shifting our worldview to reorient our perceptions and bio-political positionality? (Fig. 3)

Fig. 3: Jennifer Whitty, Fostering new materialism with clothing through practices of care and being, 2023.

Indigenous knowledge systems are rich in their potential to shift our metaphysical cognition and our recognition of connections across human's non-human world as something elevated in daily life, as on-going, and intergenerational. Epistemic knowledge based on bodily cognition is in stark counterpoint to the Western Cartesian divide and the mind-body dualism, which maintains

a rigid distinction between the realms of mind and matter. Moana ideology and mātauranga Māori have the potential of fostering new materialism based on care. *Whakapapa* as described by Manulani Meyer is an 'Indigenous pedagogy of spirituality of knowing'[7] and '... it is a life force connected to all other life forces it is more than it is a thing to accumulate'.[8] The Samoan belief of *teu le vā* [the nurturing of space relations] and *vā tapuia* [sacred connections] all add a depth and breadth to the ideology.

The space between, the in-betweenness, not empty space, not space that separates but space that relates, that vā holds separate entities and things together in the unity-in-all, the space that is context, giving meaning to things.[9]

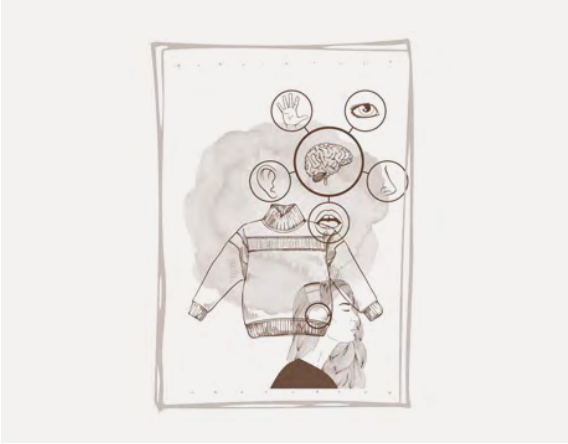

Fig. 4: Jennifer Whitty, Opening new lines of thinking and being for new 'entanglement' between humans and the material world. 2023.

As designers and wearers we can start to develop—in small, immediate ways with our immediate surroundings, through our 'situated knowledges',[10] our existing clothing, and through practices of care—what Haraway describes as 'ways of seeing'.[11] These ways of seeing reveal how power relations dominate our world/nature/object

7. Manulani Aluli Meyer, 'Indigenous and Authentic: Hawaiian Epistemology and the Triangulation of Meaning' in Norman K. Denzin, Yvonna S. Lincoln, and Linda Tuhiwai Smith (eds.), *Handbook of Critical and Indigenous Methodologies*, Sage, 2008, 213.
8. Ibid, 218.
9. Albert Wendt, 'Afterword: Tatauing the Post-Colonial Body', in Vilsoni Hereniko and Rob Wilson (eds.), *Inside Out: Literature, Cultural Politics, and Identity in the New Pacific*, Rowman & Littlefield, 1999, 402.
10. Donna Haraway, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies* 14:3, 1988, 575–99.
11. Ibid, 583.

worldview to gently challenge, disrupt, and reimagine hierarchies. This chapter asks whether this knowledge and these new rituals of care can be active instruments to reclaim pathways through fashion; and whether these can facilitate learning and unlearning that fosters a more just interrelationship with each other and the world. The chapter also asks whether fashion and clothing provide an interface or mediate to cultivate a community, to foster alternative understandings of time and space, to consider social economy and climate justice, and new materialism. The chapter explores this informality of fashion practice in the form of so-called 'commoning practices' (i.e., practices to become in common with fashion as part of a relational ontology that underlies the commons and is based on a 'deep relationality of everything') amongst three people of different cultural backgrounds and generations over the course of one regular day. A nod to the literacy device and premise of *Ulysses* that chronicles the encounters of Leopold Bloom in the course of an ordinary day. This small, local act of focus and care in a post-growth economy and society is one that is centred on human and planetary well-being rather than on growth. (Fig. 4)

Methodology and Methods

This chapter takes a mixed methods approach that prioritizes an autoethnographic research methodology and is descriptive/self-affirmative, analytical/interpretive, confessional/self-critical. The participants' personal experience of being in common with or relating to their clothing was essential to form the data to describe, analyze, and understand the embodied experience. The self-narratives were developed in a shared document that placed the self within a social context. The project focused the scope of its research on a contained and internal subject (rather than an external one) over a limited time-frame: this approach allowed for an in-depth exploration of our physical and tangible relationship with our everyday clothes over the course of one day. It draws from the work of commoning activists Bollier and Helfrich[12] who view 'commoning as a way to incubate new social practices and cultural logics that are

12. David Bollier and Silke Helfrich, *Free, Fair and Alive: The Insurgent Power of the Commons*, 2019, 6. Appendix I. Nan O'Sullivan, 'Life's Rainy Weather. My Dad Felix, my Raincoat', 2022.

firmly grounded in everyday experience'. The research aimed to go beyond the usual way of being with clothes, asking the author and participants to seek heightened awareness and documentation of daily life through the lens of their clothing. The participants are all designers from different disciplines, cultural backgrounds, genders, and generations, including: myself (an Irish female of joint NZ and Irish citizenship), Nan O'Sullivan (a Pakeha woman, a white New Zealander), and Dr. Bobby Campbell Luke (a Māori male). The participants have varying degrees of familiarity with Indigenous knowledge, from being Māori, tangata whenua (people of the land, of Aotearoa, New Zealand) embedded in mātauranga knowledge, to settler knowledge to being Indigenous from another culture. The three of us have been building a bond of sustainable research solidarity, communing with each other through the weekly ritual of meetings and discussions over the course of several months—sharing philosophies, histories, and worldviews. This project emerged from these meetings to find common ground. Instigated by Whitty, it proposes the quietly radical act that rejects the neoliberal capitalist rhythms of productivity and consumption, by simply spending time and being with our bodies. In other words: being with the non- or other-than-human material world, being 'with' the world and being 'with' others through the shared daily experience of wearing clothing.[13] This has parallels with the emergent field of New Materialism that is opening new lines of thinking for new 'entanglement' between humans and the material world.[14]

The participants were given several questions:

- How are you embodying *Whanaungatanga* [relationship building] with your clothes?
- What shifts in your understanding of your clothes when you consider your clothes' *Whakapapa* [genealogy]?
- What if you consider yourself as the *Kaitiaki* [guardian] of your clothes? Does it change the way you think about them?
- As you go about your day, how do your clothes act as an interface or link to be in common with nature, environment?

13. Freire, *Pedagogy of the Oppressed*, 81.
14. Karen Barad, *Meeting the universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, Duke University Press, 2007; Rosi, Braidotti. *The Posthuman*, Polity Press, 2013; Donna Haraway, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies*, 14:3, 1988, 575–599.

- Can you consider your inter-relationship with or through your clothing?
- Are there rituals or practices of care that have emerged, or have you become aware of new habits or activities, as a result of thinking about the above questions?

Being in Common

I set the objectives of the task to the other participants. It was interesting how each participant interpreted the guidelines, since the notion of time was flexible and fluid. The act of 'wearing' took place for each participant in the past, future, and present. The participants also placed themselves differently in the frame of wear; O'Sullivan and Campbell described to the others a garment of significance while I placed myself in the immediate, describing the wearing of clothing in my own daily life. Both O'Sullivan and Campbell focused on garments that played a significant part in their upbringing—garments that connect them to place, time, and people of significance in their lives (their parents). These clothes and practices were practical items that were worn to protect them from the elements or to cook in.

The raincoat he wore to deliver me places, watch me, push me, support me, cheer me on, and collect me was worn to do the same for my sons. He took them out and was their wise shield and filter to the world in all weathers.[15]

In O'Sullivan's descriptions, the line between raincoat and person (father) blurs, as the raincoat embodies the characteristics of her supportive father. It becomes a living entwine as its metaphysical reality is transformed through memory, whakapapa, and whanaungatanga.

As a designer of clothing for others, predominantly women, Campbell employed his primary fashion practice of describing how he translates clothing for others (women) based on visual cues, memory, and their cultural significance to him as a Māori, the tangata whenua, or the Indigenous People of Aotearoa, NZ.

Through research and visual precedents of fabric stories and images I was interested in workwear. It was the functionality and purpose of cloth that gravitated my interest towards the garment choices

15. O'Sullivan, 'Life's Rainy Weather'.

my mum would make when she would be in the kitchen at our Marae.[16]

Campbell's clothing is a visible method of communicating his Whakapapa and Whanaungatanga to his audience and wearers.

I differed in my approach as I focused on my present garments, but these garments also offered a portal to relationships with others, my mother, my friend, and my pet.

Fig. 5: Jennifer Whitty, Being in common with clothing Bobby Campbell Luke, 2023.

My body is encased in garments that were selected and gifted to me by others. …A gift from my student, a traditional Malaysian Muslim garment, that has become my nightwear. It speaks of histories and cultures that are not mine but fascinate me. The second layer is a recent gift for my birthday from a friend who knows how much I abhor and feel the cold… Womb like think of my mother. Missing her. It's unusual that I am not wearing something that she has given me today. Most of my wardrobe is a connection to her, from her, chosen by her, for me, and for her as she wears a replica on the other side of the world.[17] (Fig. 5)

16. Bobby Campbell Luke, 'Mum's Apron', Appendix 2, 2022.
17. Jennifer Whitty, 'Whitty', Appendix 3, 2022.
18. Louis Dumont, 'A Modified View of Our Origins: The Christian Beginnings of Modern Individualism', in Michael Carrithers, Steven Collins, and Steven Lukes (eds.), *The Category of the Person*, Cambridge University Press, 1985, 94; Anthony Marsella, 'Culture, Self, and Mental Disorder', in Anthony Marsella, George DeVos, and Francis Hsu (eds.), *Culture and Self: Asian and American Perspective,* Tavistock Publications, 1985, 209; Hazel R. Markus and Shinobu Kitayama, 'Culture and the Self: Implications for Cognition, Emotion, and Motivation', *Psychological Review*, 98:2, 1991, 224–253, www.doi.org/10.1037/0033-295X.98.2.224.

This exercise reveals an interdependent view of self that contrasts with the Western individuated self as posited by anthropologists and comparative social psychologists, Dumont, Marsella, and Markus and Kitayama.[18] All participants adopted subjectivities that incorporate multiple identities across time, including genealogical and spiritual associations. I delved into an auto-ethnographic account of writing about my lived experience in my night dress over the course of a day. This outfit was not pre-selected for the exercise; as a choice of partial disruption of expectations of a fashion designer, I chose to unpack my most common, mundane garment—my night dress and a distinctly unfashionable item of a house coat. As someone who initiated the project, I was prepared to go further to push the limits of acceptability.

Early morning, it is wet, cold, and windy outside. I do not want to bare my body to the elements, by removing items. I will instead indulge in the luxury of taking shelter in place, not leaving the house, not having to prepare my body to be "publicly presentable". I will relish in pursuits of the mind, basking in sloth like being. Layering more on my cold and achy body.

Fig. 6: Jennifer Whitty, Being in common with clothing Jennifer Whitty, 2023.

The exercise opened a space to understand more about each other's inner lives and our emotions and intentions through the vehicle of clothing. An ordinary garment like a night dress, apron, or raincoat is elevated through personal relationships. To be in common with clothing offers alternatives to the current connections between

the metaphysical and the corporeal. While we all took different approaches to this exercise, we all drew upon our personal value systems of family, relationships, and culture. This new practice of deep introspection through clothing led unearthed different senses of our self, and a level of discomfort for some, although it was difficult to articulate. We are not equipped to talk about how clothing feels, rather how it looks. Ours is a language of the visual, not the sensorial and psychological. (Fig. 6)

While the intention was to engage across both cultural and ideological borders to begin to appreciate new depths and new ways of seeing, this cannot be rushed, and needs time. (Fig. 7)

Fig. 7: Jennifer Whitty, Commoning fashion to decolonize our mind-body-clothing relationship, 2023.

Conclusion

While this study successfully put forward a plurality of perspectives to decolonize our mind-body-clothing relationship, there were some limitations. The data obtained from the participants, as part of an autoethnographic research method, was self-reported. While unavoidable in qualitative research, it can affect the subjects' responses and contain several potential sources of bias that should be noted as limitations. My future research will explore interdisciplinary frameworks for embodiment research such as psychology and neuroscience that gather quantitative data. Another limitation may be the framework for the research and the limited outcomes of the research. I would assert that ontological pluralism is funda-

mental to the decolonization of knowledge, power, and being, to go beyond our dominant Western, capitalist, modernist way of thinking. If we assume too narrow an ontology for fashion practice, we will miss opportunities to learn from other worldviews. In holistic knowledge systems such as mātauranga Māori, cultural, everyday practices and spirituality practices are interrelated—offering a radically different ontology to the hard edges of compartmentalization of Western science. As this research has shown, wider ontologies have the potential to shift our metaphysical cognition and our recognition of connections across human's non-human world as something elevated in our daily life. This project has just begun to unlock our full visceral, emotional, and cognitive potential to recognize our embodied cognition as wearers and designers connected to objects as an entry point for being-in-common with clothes. Further work could extend the question around how we develop new techniques and frameworks acquired through long periods of 'practice' of wear or how we train the body/mind for continuous cycles of connection through the senses. We need to fine tune our ability to understand and connect with each other to find ways of taming the desire for growth and acquisition outside of the neoliberal, market-driven society and consumer culture. Curbing our desire to perpetuate buying more stuff or not being in-common with our clothes is difficult. We can take solace in reaching inwards, to something that lies within us, in the domain of spirituality interbeing to cultivate the power of the imagination and narrative. Other worldviews offer considerations that have potential to deepen our engagement fostering affirmative relationships in common with our clothes. Descartes' mind/body dichotomy is omnipresent in our relationship with objects/games. Unpacking embodied epistemologies of both Indigenous and Western lenses to build interrelationships will take time.

This exercise has opened that uncertain, difficult space between the 'old-stories-we-live-by' of our clothes based on market logic (of new and more) and the 'new-stories-we-(want to)-live-by' of being in common, based on values of time, care, attentiveness, and being. Bringing magic, and the metaphysical, into everyday life involves taking time to develop rituals and practices that act as a link between nature and the body. The kapa haka is a bodily practice that embodies physical and spiritual aspects such as 'ihi (authority, charisma, awe-inspiring, psychic power), wehi (fear, awe, respect)

and wana (thrill, fear, excitement, awe-inspiring)'[19] and is worth exploring.

This temporal exercise has the potential to generate alternative awareness and contexts for us and clothing. From this theory of knowledge, there is no genealogical distance between us, our clothes, our bodies, nature, and knowledge—we are in common. A garment is not a fixed, closed construct that happens without genealogy and consequence. Rather, clothing can be understood as a set of values—considering our impact on the land, acknowledging how we share space with non-human neighbours, modelling reciprocity in our relations. As we carry these values forward, clothing—along with the wearers, people, communities that exist in them and created them—will change for the better, for all.

19. Nathan Matthews, 'Physicality of Māori Message, Ko te tinana, he waka tuku korero', *Junctures*, 3, 10 December 2004, www.junctures.org/index.php/junctures/article/view/168/171.

Appendix 1.
Life's Rainy Weather. My dad Felix, my raincoat
Nan O'Sullivan

My father died in 2017 at ninety-three, having cemented himself as much into my adult life as he had into my childhood. I came across these simple words written by a young poet Bernard Asuncion, while thinking about my dad.

'My raincoat is my father. In my life's rainy weather'.

It's raining today so I feel his absence acutely. I have four older siblings, all boys. So as an only daughter, my dad was my shield and my filter in all weathers. He took me out in all weathers, he encouraged me to explore life and splash in puddles just to feel the water seep over the top of my gumboots. He encouraged me to take a risk – leave the raincoat at home. He taught me to consider the landscape and the context and importantly how to prepare to experience it, define myself as a part of it, enjoy it, engage with it, or choose not to.

The raincoat he wore, to deliver me places, watch me, push me, support me, cheer me on, and collect me, was worn to do the same for my sons. He took them out and was their wise shield and filter to the world in all weathers.

Knowing I 'had' a raincoat for life's rainy weather, that I too needed to 'be' a raincoat for my children, value the raincoats that preceded both me and my dad, and lay the pathway for the raincoats to come, was a gift may dad gave me. That gift is not just a metaphor, some days it hangs dripping wet in my hallway, others crumpled under the dog in the boot of the car – but it lives on.

Appendix 2.
Mum's Apron
Bobby Campbell Luke

In my third year of fashion design, as design students we are asked to produce a collection of six outfits and a body of work by the end of our studio course. Through research and visual precedents of fabric stories and images I was interested in workwear. It was functionality and purpose of cloth that gravitated my interest towards the garment choices my mum would make when she would be in the kitchen at our Marae. Mum's apron become that catalyst and reference for much of the collection's design. It was also the breadth of the garment that accrued more meaning and cultural significance in the space Mum wore it in. And also, the other functional choices she would wear with the apron, such as multiple skirts for different roles on the Marae or different aprons used based on the area she worked in, which where Tapu or Noa.

Harnessing the recontextualised understanding of a garment played a big role in the decision making around my design choices for this collection and pushed me to further articulate these behaviours through tacit knowledge. Often Mum would make anecdotal statements that would reflect the reason why she made the choice to wear what she wore, and through this process I started to draw from her experience and apply that to a design methodology.

Nāku iti noa, nā.

Appendix 3.
Whitty
Jennifer Whitty

Whanaungatanga [relationship building]:

Early morning, it is wet, cold, and windy outside, I do not want to bare my body to the elements, by removing items. I will instead indulge in the luxury of taking shelter in place, not leaving the house, not having to prepare my body to be 'publicly presentable'. I will relish in pursuits of the mind, basking in sloth like being. Layering more on my cold and achy body.

My body is encased in garments that were selected and gifted to me by others. A paradoxical scenario for me, as it simulatively brings me equal measures of joy and dread. I feel my privilege. I am grateful to receive gifts but am I ungrateful if it is overshadowed by feelings of unease about having new items. As I do not take ownership or guardianship lightly. I acutely feel and think of these garments' whakapapa. Where has this garment been made, and how has it been harmed? Who will it harm?

I have been made *Kaitiaki* [guardian] of something that does not sit with all my values, or I don't fully understand its cultural significance. But they are mine now, for better or worse, till death do us part, whether I like it or not...

A gift from my student, a traditional Malaysian Muslim garment, that has become my nightwear. It speaks of histories and cultures that are not mine but fascinate me. The second layer is a gift for my recent birthday from a friend who knows how much I abhor and feel the cold. A huge fleece blob of a garment that feels like a shelter, blurs the line between clothing/bed/house. This helps me to reflect on how much I can and can't control within myself and my daily life. It is how I adapt to things that matters

The outer layer softness, down, feels like an animal in a nest

Womb like think of my mother. Missing her. It's unusual that I am not wearing something that she has given me today. Most of my wardrobe is a connection to her, from her, chosen by her, for me, and for her as she wears a replica on the other side of the world.

This exercise is hard, why did I set it to not only myself but others? I'm sorry! My vocabulary is not sufficient and cannot capture my feelings.

I stroke my cat; can I stroke my garment in the same way?

Animal—alive, garment is also not dead

Snuggling my cat, feeling one, my skin is soft downy fleece, like cat

Hyper awareness—I can't stop thinking about my clothing. It feels intense.

My enclothed arm encases my cat in his most encased position, the line between body, garment, and animal is exceedingly difficult to discern. His fur clings to the pile.

My mind and body are in conflict, mixed signals, I am productive, busy writing but my clothes are ones of deep relaxation, doing nothing clothes. Clothing archetypes are connected to our function, role in the world. Capitalist, productivity. If one was to view my external appearance it looks like I am inactive. If we were one with nature—we would go with the flow (Taoist). When I just focus on wear, I don't care about the external goal of being dressed. Wear allows me to??

Learning to be in my clothes. Aware, but relaxed?

My movements are different, heavier. externally my body line is not visible, the Tā-Vā is expanded. I feel bigger, less human, less female, less restricted by societal codes of conduct.

Obtrusive Relationships: Commons in Design with a Particular Focus on Human De-Centred Design

Eva Verhoeven

Eva Verhoeven is an artist/designer and researcher working across different disciplines, methods, and media. She works as a Programme Director for Creative Computing & Robotics (UG) at the Creative Computing Institute, University of the Arts (London). She is interested in more-than-human-centred design and critically engages with the role design can play in radically and more justly transforming our worlds by working on and through digital materiality. Verhoeven has exhibited and presented her work and research extensively and contributed to a range of publications, events, and symposia. She is a member of the interdisciplinary research group 'Supra Systems Studio.'

In his etymological essay 'Vom Wort Design' [On the Word Design],[1] Vilém Flusser follows the origin of the word design (both a verb and a noun) through an etymological and contextual journey and arrives at a definition that aligns design with the act of deceiving, whereby a designer 'is a cunning plotter laying his traps'.[2] These are traps specifically plotted to deceive nature, 'being a human being is a design against nature'.[3] Flusser uses the lever and the plastic pen as examples of design artefacts to illustrate the deception. The lever is used to show how design tricks or deceives nature by mimicking a human arm, outsmarting gravity and thereby 'freeing us from our natural condition'.[4]

The plastic pen is used to show that as a 'cheap utensil', it only holds value because of its design, which makes it write. As a throw away item, the ideas, the labour, and the material are devalued. Following Flusser, design tricked us into conceiving the plastic pen as a throw away item, 'the material [being] practically worthless'.[5] I would argue that Flusser didn't go far enough: as we now know, the cost of raw materials and processes to create these plastic pens in huge quantities and then discard them is truly 'a design against nature' and has long term cost implications that are enormous to our environment. This is not a monetary cost, but a cost to our common resources. One could argue, therefore, that design tricked us into a dualistic relationship with nature and into devaluing the 'ceaseless flow of life in which everything is inevitably immersed'[6] and interconnected. Against the stark backdrop of the climate emergency and the calling of the new geological epoch of the anthropocene, which points to the impact of human activity on planetary health, it seems equally urgent to rethink and 'redesign' what design means and the impact it has and can have on planetary health.

Much of design is based on understandings of the human as a 'discrete, individual subject'[7] that neatly translates into a neoliberal framework that requires us to dream, imagine, and design individually rather than collectively or in common; and equally, that requires

1. Vilém Flusser, 'Vom Wort Design', in *Vom Stand der Dinge*, Steidl Verlag, 1993, 9.
2. Vilém Flusser and John Cullars (Translator), 'On the Word Design: An Etymological Essay', *Design Issues*, 11:3, 1995, 50.
3. Ibid, 52.
4. Ibid.
5. Ibid.
6. Arturo Escobar, 'Design for Transitions', in *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*, Duke University Press, 2018, 146.
7. Laura Forlano, 'Posthumanism and Design', *She Ji: The Journal of Design, Economics, and Innovation*, 3:1, 2017, 17.

these to be instrumental design projects that aim to solve localized and specific human-centred problems. The individual subjects fit into neoliberal economic models, in which the individual as consumer might have the power to choose but not the power to resist or counter collectively.[8] Because of the complex socio-technical systems we are entangled in and the planetary challenges we face, this approach is not sufficient and our entanglements and 'new relations to the natural world and to socio-technical systems are calling these previous understandings into question'.[9]

Obtrusive Relationships

In 2019, the critical practice group Supra System Studio (SSS)[10] built the botanical infrastructure 'Obtrusive Relationships' to explore some of the issues of interconnectedness raised above. It was used as a demonstrable example of a design approach we describe as human de-centred design, positioning it within interconnected systems and the interdependence of all things. (Fig. 1)

Fig. 1: *Obtrusive Relationships*, London Design Festival 2019. Reused steel frame, planters with a range of different plants that were selected for their soil and air detoxifying properties and bee/insect pollination. The planters were connected through a low-energy sensor network for the long-term development of the plant and insect life and to moderate the plant's feeding.

This project exploits SSS's location and its role in the London College of Communication (LCC), University of the Arts London (UAL), to consider design practices that benefit nonhuman life, and seeks

8. Forlano, 'Posthumanism and Design', 18.
9. Ibid, 17.
10. For 'Obtrusive Relationships': Gareth Foote, Wesley Goatley, Marion Lagedamont, Alistair McClymont, Tobias Revell, Oliver Smith, Eva Verhoeven, Georgina Voss.

to undo the environmental damage that we cause. As participants in the material, social, and administrative processes of the building, SSS uses its position to demonstrate methods of appropriation and reuse, using the waste generated by the LCC building to detoxify its surrounding environment and putting it to use to support purposeful facets of more-than-human life such as plant and insect life.

In her paper 'The Environment is not a System',[11] Tega Brain explores how computational and systems thinking shape ecological worldviews that understand the environment and planetary health as a system—the ecosystem. Drawing on authors like Katherine Hayles and Jennifer Gabrys, Tega Brain argues that computation is not a neutral tool for modelling worlds, but that rather 'as a mode of inquiry it has a powerful world-making capacity, generating new pathways for action and therefore new conditions'.[12] This ecosystem worldview suggests that our planetary entanglements are discrete, functionable, and therefore knowable: 'a systematic view of the environment connotes it as bounded, knowable and made up of components operating in chains of cause and effect'[13] and therefore controllable if we can figure out what the discrete components are. In this worldview, we can manipulate, control, and fix what has been broken—a very anthropocentric and solutionist approach to working with the complexities of our planetary entanglements.

With this in mind, in 'Obtrusive Relationships' we aimed to build a structure that was also critically reflexive around the studio's engagement with local institutions in setting up the project, interrogating the aesthetics and interactions of institutional operations as they are interrelated and entangled in environmental and social impact. In doing so, the project aimed to bring to attention the interconnectedness of ecological, institutional, and technical systems.

The built components, such as the planters and the fertiliser, were recycled from existing and waste materials at LCC. For example, the metal frame was a reusable exhibition structure already in existence at the college, the wooden containers were made from waste material from the 3D workshops, the soil was mixed with coffee grounds from the cafe and acts as fertiliser, while the empty milk bottles from the college kitchens were used as water containers. In addition, the botanical infrastructure was maintained through a low-energy

11. Tega Brain, 'The Environment Is Not A System', *A Peer-Reviewed Journal About*, 7:1, 2018, 152–165.
12. Brain, 'The Environment', 153.
13. Ibid.

sensor network for the long-term development of the plant and insect life and to moderate the plant's feeding. The self-adjusting watering system monitored soil moisture levels in each planter and conveyed this information online. All electronics were bought second hand, removing them from the wasteful cycle of discarded electronics goods, which further pollute the environment with harmful materials such as lead and cadmium.

The plants for the botanical structure were chosen for their specific properties of detoxification of soil, absorption of airborne pollutants, and provision of benefits to insect populations. Soil, air, and water—part of our traditional commons—are polluted through various anthropogenic processes such as mining, metal smelting, manufacturing processes, transport, municipal waste, landfill, and the use of fertilisers, to name just a few. While engineering solutions for extracting pollutants incur other environmental costs such as creating and storing waste by-products, there are natural occurring organisms that are used to clean up contaminated environments, a process called phytoremediation. For example, we planted *Brassica Juncea* (Indian Mustard) for its ability to absorb large quantities of heavy metals from the soil—including cadmium, lead, and selenium. *Helianthus Annuus* (Common Sunflower) absorbs heavy metals from the soil, including lead, zinc, and nickel, while the flowers attract bees and other insects, and edible seeds provide food for birds.

Fig. 2: 'Obtrusive Relationships'—Detail, London Design Festival 2019. While the botanical infrastructure was first built and exhibited indoors, the long-term intention was for the majority of it to move to an outdoor area behind the LCC (London College of Communication).

Dracaena Deremensis absorbs large quantities of benzene (a petrochemical found in petrol) from the air. LCC is situated on a large roundabout in London and these plants were positioned near the main

entrance. Equally, *Chlorophytum Comosum* (Spider plants) are indoor plants that detoxify various particulate matter from the air. In addition, we planted bee and insect pollinating plants and took care to map these across the seasons. (Fig. 2)

More-than-Human Commons in Design

Two observations from working on and exhibiting the botanical infrastructure in 'Obtrusive Relationships' will contribute to concluding this short chapter. Firstly, the human de-centred design method we used, which aimed to make perceptible the interconnectedness of our ecological, institutional, and technical infrastructures, achieved interesting debates and conversations throughout the production of the infrastructure; in particular, when we were interrogating the building use, exploring water leakages, heating runoffs, inefficiencies, pollution, as well as food and food waste management across the college with a wide range of stakeholders. Equally, we encountered debate and conversation at the moment of the exhibition, which remains an anthropocentric activity. Questions were asked about the aesthetic values for human consumption. In the chapter 'Tentacular Thinking: Anthropocene, Capitolocene, Chthulucene',[14] Donna Haraway moves us through the anthropocene and the capitolocene towards the chthulucene, which neither has space for 'cynical quietism' nor dystopian visions in the face of the destruction. Rather it is a 'third story, [...], for staying with the trouble' to make 'for still possible pasts, presents, and futures'.[15] 'Obtrusive Relationships' was an attempt of 'staying with the trouble' within the institutional infrastructures and to do so by focusing on human de-centred design in an anthropocentric context of an exhibition, to enable conversation about commons that are necessarily interconnected and connections that are necessarily interdependent.

The second observation is about time: the botanical infrastructure worked against measured anthropocentric time on many levels. Plants don't grow according to exhibition schedules; they don't detoxify soil necessarily at one measurable moment of time. Commoning

14. Donna J. Haraway, 'Tentacluar Thinking: Anthropocene, Capitolocene, Chthulucene', in *Staying with the Trouble: Making Kin in the Chthulucene*, Duke University Press, 2016.
15. Ibid, 55.

in design requires long term commitment and investment of time. It even requires a different understanding of time—not as progress or within yearly exhibition or funding circles—but planetary time.

Responding to Flusser's definition and trying to move beyond design as deception with its catastrophic consequences for planetary health, we need to expand our understanding of design from that of a human-centric activity to one of post-human centred design following Laura Forlano. Or perhaps we need to consider human de-centred design in order to purposefully challenge the central, discrete, and individual position humans take in design. At times this will require un-designing, at others it will require not designing at all, and this needs to become a tension that we build into our design processes.

Following Arturo Escobar and reflecting on interconnectedness, the commons, and commoning shows

the commons-destroying dualistic conceptions, particularly the dualisms between humans and non-humans, the individual and the communal, and mind and body; these discussions resituate the human within the caseless flow of life in which everything is inevitably immersed.[16]

Design needs to consider the interdependence of all beings—a commons in design that considers the more-than-human and a plurality of voices. Design needs to bring to the fore the need to reconnect with each other and the nonhuman world. Not a design against nature as Flusser called it, but a design with and for the caseless flow of life. This also requires us to think of 'designed' time differently, as continuous and planetary.

16. Escobar, 'Design for Transitions', 146.

III.

Design, Networks, and Digital Making

Lo-Tech is the New Hi-tech

Zoe Romano

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Design Commons have been in an interesting relationship with Openness. If you're a Gen X, i.e., a Western person born between the end of the sixties and the beginning of the eighties, you are part of the generation who first heard the distinctive sound of an Internet modem.[1] It was only through this recognizable sound that some of us got used to the Internet; we were using an analog phone line with a 56k modem, which was the first model with a speed fast enough to load images via a telephone line, as it was four times faster than previous models. This fast modem, the last one before moving to ISDN and ADSL lines, was patented in 1996 by Brent Townshend. A Canadian inventor and electrical engineer, Townshend was working on the concept of a Music Fax System—a device he thought we could use to download music from servers using direct-dial telephone connections. In a failed attempt to transfer music files by getting high-speed data from a digital server to multiple analog destinations, however, he invented a better modem and paved the way to web 2.0.

Even if we could add images to texts on web pages, it was a time when we were connected to the Internet from home and we could not receive phone calls while the line was busy surfing. Despite this and other limitations, the term 'blogosphere' emerged online in 1999 as a neologism to express the realm of self-published blogs on the Internet where people shared texts, images, and links that were freely accessible and read by others.

With the widespread accessibility of networking technologies, especially in the US and Europe, sharing information came at a zero marginal cost, allowing the creation of a new participatory context that contributed to the emergence of the 'openness' paradigm. The idea of Openness[2] has, since then, become an umbrella concept referring to increased accessibility of knowledge, technology, and

1 If not, you can listen to it on YouTube www.youtube.com/watch?v=gsNaR6FRuO0 or search for: '56k modem internet connection sound'.

2 Daniel Schlagwein, Kieran Conboy, Joseph Feller, Jan Marco Leimeister, and Lorraine Morgan, '"Openness" with and without Information Technology: a Framework and a Brief History', ***Journal of Information Technology***, 32:4, 2017, 297–305, www.doi.org/10.1057/s41265-017-0049-3.

other resources. It also came to signify a different approach to the production of knowledge itself, pushing us to reflect on the transparency of action of any organization, recognizing that to foster the diversity of contributions it was necessary to reach a high permeability of its structures.

The political implications of this new environment initiated discussions within the 'hacker' counterculture since the mid-eighties, right where the ideas of free and open source software drove most of the immaterial infrastructures that turned the Internet into a worldwide medium. Richard Stallman within the Free Software Foundation invented and popularized the concept of 'copyleft', a legal mechanism opposed to copyright to protect the modification and redistribution rights for free software. He studied at Harvard and then became a programmer at MIT, joining the hacker debate and especially contributing to clarifying the meaning of the word 'free':

> Thus, free software is a matter of liberty, not price. To understand the concept, you should think of 'free' as in 'free speech', not as in 'free beer'. We sometimes call it 'libre software', borrowing the French or Spanish word for 'free' as in freedom, to show we do not mean the software is gratis.[3]

Programmers informally practised the sharing of code, and the Internet made this practice a worldwide collaboration. Stallman had the vision to foresee what impact it could have in the following years and worked on formalizing some concepts in order to publicly oppose the rising trend of commercial software companies, which were starting to lock the source code from external modification. The creation of 'copyleft' leaned on the four freedoms embedded in Free Software:

> 0[4]—The freedom to run the programme, for any purpose;
> 1—The freedom to study how the programme works and change it; access to the source code is a precondition for this;

3 'What is Free Software?' ***Free Softward Foundation***, 20 May 2023, www.gnu.org/philosophy/free-sw.en.html.

4 The list starts from 0 because around 1990 there were three freedoms, numbered 1 to 3. Then they realized that the freedom to run the program needed to be mentioned explicitly. It was clearly more basic than the other three, so it properly should precede them. Rather than renumber the others, they made it freedom 0.

> 2—The freedom to redistribute copies;
> 3—The freedom to distribute copies of your modified versions to others.

The ambiguity of the term 'free', in any case, generated misunderstandings and many coders chose to use an alternative: the term 'Open Source Software' became a more widespread and less political option, especially in the commercial field. Even if the term shares many practical features with free software, it focuses more on the technical issues of software development, avoiding themes around user freedom and ethics. In more formal terms, a software becomes open source if the terms under which it is distributed meet the Open Source Definition of the Open Source Initiative (OSI), a non-profit corporation acting as a standards body and building bridges between different communities of practice.[5] Conversely, a software can be defined as Free Software simply if it respects the four fundamental freedoms described above. In general, all existing Free Software is also open source, but not all open source software is Free Software.

In the years following the turn of the century, what happened with software started to be discussed and practised beyond coding and the habit of sharing and remixing flourished within all digital creative sectors. Lawrence Lessig, professor at Harvard, realized how the limits of copyright prevented new practices of content creation. To avoid the tendency towards overcriminalization, Lessig introduced Creative Commons licences, which allowed commercial and noncommercial copying and fostered a discussion on copyright reform:

> if you weren't in the traditional 'all rights reserved camp', you must be anti-copyright or a pirate. We sought to establish some middle ground because we recognized that, in fact, many people believed in copyright but did not believe that their creative works should be as tightly regulated as they were under the all rights reserved model.[6]

In this new framework of online sharing, designers and artists started releasing their work under a series of different more

5 OSI was founded in 1998, see www.opensource.org/.

6 'Interview with Lawrence Lessig', ***WIPO Magazine***, February 2011, www.wipo.int/wipo_magazine/en/2011/01/article_0002.html.

permissive licences that allowed remixes and modifications by others. Theorists and researchers started to realize that the impact of this new type of abundance had another unique feature: it was enabled by new digital platforms like Wikipedia, Git, Flickr, Youtube, and more, which optimized the way bits of knowledge could be shared, downloaded, modified, and even forked, enabling alternative ways of production compared to the analog era.

Drawing on the work of Elinor Ostrom, the first woman to win the Nobel Prize in Economic Sciences in 2009 for her analysis on the governance of the commons, we can frame the implications of managing a collective use of a limited common resource.[7] Likewise, around the mid-2000s, the first publications reflecting on the impact of the wave of digital content production and sharing came out. The notion of digital commons is pivotal in relation to nurturing openness. Its definition was articulated by Felix Stalder:

> The digital commons comprises informational resources created and shared within voluntary communities of varying size and interests. These resources are typically held *de facto* as communal, rather than private or public (i.e., state) property. Management of the resource is characteristically oriented towards use within the community, rather than exchange in the market. As a result, separation between producers and consumers is minimal in the digital commons.[8]

The transition of a consistent part of cultural production being dependent on a physical medium to becoming digital, almost freely shareable online and consumed instantly, was clearly creating a new productive ecosystem.

In *The Wealth of Networks*[9] Professor Yochai Benkler coined the term 'commons-based peer production' (CBPP) to describe wherever and whenever people freely associate and create digital commons together, which then become shared resources that are maintained by a community or

7 Elinor Ostrom, ***Governing the Commons: The Evolution of Institutions for Collective Action***, Cambridge University Press, 2015.
8 Felix Stalder, ***The Human Economy: A Citizen's Guide***, Polity, 2010.
9 Benkler Yochai, ***The Wealth of Networks***, Yale University Press, 2006.

a group of stakeholders through their own rules and norms. The peer aspect refers to the level of openness or rather the capacity of people to join these open networks of value creation without asking for formal permission. Starting from this definition, the Peer2Peer (P2P) Foundation[10] was one of the first to move forward and radicalize the approach asserting that peer to peer (P2P) production can only be a new mode of socio-economic production[11] if the value produced exits the cycle of capital accumulation, to become part of the cycle of the commons—meaning that the value created is redistributed to the commoners:

> This emerging modality of peer production is not only productive and innovative 'within capitalism', but also in its capacity to solve some of the structural problems that have been generated by the capitalist mode of production. In other words, it represents a potential transcendence of capitalism. That said, as long as peer producers or commoners cannot engage in their self-reproduction outside of capital accumulation, commons-based peer production remains a proto-mode of production, not a full one.[12]

From Bits to Atoms

The idea of openness and P2P production was applied more widely to the manufacturing of physical objects when around 2005 digital fabrication technologies became more accessible thanks to the contribution of a series of collective actions based on the concept of 'maker' and 'maker movement'. This new scene was inspired by the European hacker community focused especially on the right to free universal access to

10 P2P Foundation Wiki, wiki.p2pfoundation.net.

11 The term mode of production derives from the work of Karl Marx (1818–1883) and refers to the varied ways that human beings collectively produce the means of subsistence in order to survive and enhance social being. Marx believed that human history could be characterized by the dominant modes of production. A precursor concept was Adam Smith's mode of subsistence, which delineated a progression of types of society based upon how the citizens of a society provided for their material needs.

12 Michel Bauwens, Vasilis Kostakis, and Alex Pazaitis, ***Peer to Peer: The Commons Manifesto***, University of Westminster Press, 2019.

computers and technological infrastructure, which gathered around the Chaos Computer Club in Germany in the 1990s and in various hacker spaces in Europe. It started as a movement motivated by the open source design mottos such as 'If you can't open it, you don't own it' and promoted a culture of making repairable and/or customizable objects through organizing events like Maker Faires and setting up Makerspaces—labs where people could share tacit knowledge and make with others. At the core of this approach there was a general refusal of the increased opacity of commercial devices matched with planned obsolescence strategies to force citizens into a throwaway culture. The development of accessible digital fabrication technologies was enabled within this ethos and also facilitated by the expiration of patents related to 3D printing. This allowed for initiatives such as RepRap, a contraction for replicating rapid prototype, born as a research project by Adrian Bowyer, a Senior Lecturer in mechanical engineering at the University of Bath. Bowyer aimed to develop a low-cost 3D printer that could print most of the pieces to replicate itself. It soon became the first open source 3D printer to fuel the 3D printing revolution and the most widely-used among the global members of the Maker Community—not just because the team shared the files, but especially thanks to the detailed documentation produced by its founders and continuously updated by the community of users, which lowered the barriers for replication, adaptation, and commercial use. RepRap and many other digital fabrication machines run on Arduino, an open source, easily programmable microcontroller used by tinkerers, makers, and designers to build devices that interact with the real world. Unlike RepRap, and although also starting as an educational project, Arduino evolved into a commercial product with an alternative business model based on: open design blueprints freely available online; a strong community engagement on bug fixes and new features implementation; and, most importantly, a registered trademark that allowed anyone to manufacture boards identical to Arduino as long as they used a different name. This approach didn't just create positive externalities on people and companies, which could benefit from its shared knowledge, but it became a new, recognized standard

generating a series of new businesses of Arduino compatible devices and components fuelling the potential of DIY and DITO (Do-It-Together) in different fields.

Arduino boards, combined with their open source software and the community taking care of documentation, became an example of best practice for the creation of a family of many CNC machines released in open hardware. CNC is the acronym of Computer Numerical Control machining and describes a manufacturing process in which a computer software controls the movement of tools and machinery following instructions contained in a file with a level of accuracy and consistency that can't be achieved manually. These types of machines, thanks to a series of newly accessible components and shared knowledge, could be transformed in low-cost, simplified, open hardware versions through a network of collaboration happening on online platforms for sharing, forking, and discussions, but also localized in site in various makerspaces and fablabs around the world. Distributed manufacturing was the idea fuelling bottom up innovation in health and care[13] (wearables, prosthetics, medical devices)[14], vehicles (drones, submarines, tractors, and other farming machines)[15], art and design (houses[16], musical instruments, performance gears, light controllers, milling and knitting machines). This new open context of hacking, as a reactive practice of opening up what is artificially locked and unfixable, could evolve into making as a pro-active practice of collaborating to manufacture blueprints of objects and machines that cannot be created or distributed commercially because they respond to the needs of a small group of people, or because their mark-up is too low from a scale-up business perspective.

In 2011, a volume titled *Open Design Now* became one of the first European publications to inspire designers of

13 Valeria Graziano, Zoe Romano, Serena Cangiano, Maddalena Fragnito, and Francesca Bria, 'Rebelling with Care. Exploring Open Technologies for Commoning Healthcare', ***Humanities Commons***, 2019.

14 Jimmy Ahern, 'Open Source Software is Transforming Healthcare', ***Open Source***, 12 January 2023, www.opensource.com/article/23/1/open-source-software-transforming-healthcare.

15 'Open Source Blueprints for Civilization. Build Yourself', ***Open Source Ecology***, www.opensourceecology.org/.

16 'Wikihouse', www.wikihouse.cc/.

the importance of open design as a direction—not just as a grassroots alternative, but as a professional way to deal with the systemic changes needed in contemporary society. Following the joint effort, the Open Design + Hardware (OD+H) Working Group of the Open Knowledge Foundation began writing and discussing the definition of Open Design.[17] In short, Open Design is a discipline producing maker-friendly objects, embedding the potential of being modified, fixed, and improved by others. The documentation can take different formats with various shades of openness:

> 0—a documentation of a design artifact and the manufactured or final design artifact;
> 1—an open collaborative and openly documented process that manages the whole life cycle of a design artifact;
> 2—an organization that extends the work of the founders of the project with participation, discussion, contribution;
> 3—an open collaborative and openly documented budget that allocates costs and revenues;
> 4—an open collaborative and openly documented governance that manages the processes, participation, and budget of the project.

Within this framework we can see the transition from making as a grassroots movement exploring the potential and empowerment of openness to the more professional options of an open designer who deliberately chooses to explore a different role in society to avoid being complicit to an atomized consumer culture, and rather to contribute to the empowerment of citizens and society in building a more active relationship with technologies beyond frictionless, refined design.

As Charles Thorpe wrote:

> The production of goods depends on global supply chains, the complex organization of corporate bureaucracies, complex financial instruments, and regulatory apparatuses. But the market also atomizes us as individuals, since each of us sells ourselves as a commodity on the labour market, in competition with

17 'The Open Design Definition v. 0.5', ***GitHub***, www.github.com/OpenDesign-WorkingGroup/Open-Design-Definition/blob/master/open.design_definition/open.design.definition.md.

everyone else, and satisfies our needs through the purchase of goods for private (individual and family) consumption.[18]

Openness and Design Commons are a starting point of innovative business models based on shared knowledge, transparent processes, critical making, and distributed manufacturing—all key features that are more in tune with the unfolding climate urgency we will face in the next ten years.

Open Design, Forward to Basics

Most designers today understand the crisis we're facing and the need to reduce humanity's negative environmental impact. Climate change has reached a level so high that we need to shift into emergency gear. Many scientists have demonstrated that our survival is not dependent upon superiority, but upon symbiosis and close collaboration between humans and not-humans, starting from evolutionary biologist Lynn Margulis who showed us that the 'survival of the fittest' is in reality the 'survival of the most symbiotic'.[19] Top ranked design studios are working on hi-tech solutions mimicking nature but caging them in a proprietary framework and extracting them from an environment that could generate them without any recognition nor compensation. A recent book titled *Lo-Tek*[20] contains a documented variety of nature-based technologies that have been constructed by Indigenous cultures across the globe that need to be considered as potential climate-resilient infrastructures. It's a source of inspiration on how we could curate the development of design commons in the near future. The pages of the publication show ancient technologies that we, Western humans, decided to ignore or belittle until now, similarly to many open design devices and objects that are considered too basic, not sufficiently frictionless or modern by traditional, more commercial approaches. This new research field exploring

18 Charles Thorpe, ***Necroculture***, Palgrave Macmillan, 2016.

19 Lynn Margulis, ***Symbiotic Planet: A New Look at Evolution***, First ed., Basic Books/ Perseus Books Group, 1998.

20 Julia Watson and Davis Wade, ***Lo-Tek: Design by Radical Indigenism***, Taschen, 2020.

local technologies reveals to us that it's all based on design commons, shared by tacit and oral knowledge, and has the potential to be remixed with the best practices of digital commons-based open design. We should just start delinking design practices from Eurocentric hierarchies to draw upon an entire body of unexplored lo-tech technologies showing us how humans have been dealing with extreme climate conditions since forever through commons-based design.

Reparatory Design: Sustainable Ecologies of Embodied Practices, Vulnerable Knowledge, and Resilient Methodologies in Barcelona

Luis Guerra

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The ecological crisis we are all globally experiencing is almost indescribable. It touches all the aspects of our survival and has exposed us to the fragility and fracturability of our world.[1] Through their practices, artists and designers worldwide engage with multiple forms of damage. They search for solutions, create reparations that answer to and challenge the disciplinary institutional responses, and enable new processes of adaptation, rethinking, healing, and care.

This chapter reflects on a new perspective that critically and creatively interrogates and rearticulates our cultural notions of art and design. This new framework focuses on reparatory design practices and draws attention to their related methodologies, models, and practices hitherto misjudged by the disciplinary regimes of academia. The chapter aims to show how these practices enable the constitution of spaces of radical emancipation where resilient methodologies and vulnerable knowledge can grow; it draws primarily from three initiatives in Barcelona, Spain.

Design is a culturally situated phenomenon. The material and formalized form of its practices, its media and technological contingencies, its modes of perception and scope of expectations, as well as the functions, modes of action, and purposes of design have been and are being constantly confronted with historical, political, economic, and even spiritual changes in the societies they happen to occur. Design is a form of cognition of the world, which is why its cognitive perspective and way of understanding are fundamental to the kind of world it makes known.

A reparatory design approach aims to think of design practices from an inclusive, contributive, regenerative, transitional perspective as forms of critical-cognitive, reflexive, and experimental spacing. Hence the need to compose sustainable research ecologies—nodes of analysis that can include existing procedures but that are also open to new procedures.

1 Elizabeth Spelman, ***Repair: The Impulse to Restore in a Fragile World***, Beacon Press, 2002.

More specifically, a reparatory design approach focuses on the networks and relationships built between communities, design practices, and everyday lives. In doing so, it recognizes that design has been, and is, a fundamental agent in the industrialized transformation of the context of social production. This chapter thus explores a reparatory design approach in so far as it is able to deal with the current conditions and the acceleration of social changes happening at different levels (emotional, economic, political, and relational). It asks: To what extent is a reparatory design approach in tune with models of social justice, democratization, and participatory inclusion? Where does thinking about design from a reparatory perspective lead us?

This chapter focuses on the way specific design initiatives (in Spain) are adapting a reparatory design perspective—answering material and immaterial needs, extending the reparations toward social relational bounds, emotional fields, communicational performativities, poetics of attention, and ecologies of collective affection. In doing so, it contributes to a worldwide paradigm shift in the field of design practices and those around them, from technology to politics, from identities to public policies. This reparatory perspective implies strengthening a conception of creation that assumes the necessity of answering different global and local problems through new approaches that reflect the multiplicity and complexity of our societies and acknowledge our historical and culturally diverse roots, languages, and ways of life.

To Repair

To repair is to recognize the world's vulnerability and respond to it, enacting a collective commitment towards its actual damages.[2] In her book *Repair*, Elizabeth V. Spelman defines the scope of the 'impulse to restore' in humans. She even coins the term *Homo reparans* to acknowledge that the impulse to repair

2 'Understanding vulnerability as not something we must (or can) defend against, but instead as a constitutive fact of our lives, a world-shaping mattering, offers us something', Alexis Shotwell, ***Against Purity: Living Ethically in Compromised Times***, University of Minnesota Press, 2016, 86.

seems a fundamental feature of the human animal.[3] But she also states a significant differentiation within the realm of reparation. Repair is acting towards something that has been broken or damaged by accident, by the force of natural causes, because of the object's materiality or the intensity of its use. However, there is a substantial difference between repairing an object (such as a computer, watch, washing machine, or a piece of furniture) and repairing a relationship.[4] To repair a relationship requires:

> (…) a complete understanding of the relationship between the victim and the wrong-doer, the nature of the conflict, the full range of harms that the victim received, what can be done to repair the harm and an understanding of what prompted the offender's behaviour and what can be done to prevent this behaviour from occurring in the future.[5]

As humans, we are bodies in relational condition to our environments. Our bodies are, in fact, vulnerable, breakable. We are subjects of damage, fracture, and wounds. As collectives, we are subject to potential harms, injuries, and pains that exceed the mere parameters of our individualities. Moreover, the reparation of these harms cannot be just repaired by ordinary tools. What types of tools have been created to repair these kinds of damages? Reparatory justice is one of the main tools that human societies have developed to confront these relational injuries.

Reparation has to do with the civil responsibility condition of every society member. Reparation constitutes an indispensable aspect in constructing equitable, fair, and democratic societies. The concept of reparation can be traced to the first human legal code, the Hammurabi code, where the

3 'The Human Being is a repairing animal. Repair is ubiquitous, something we engage in every day and in almost every dimension of our lives. ***Homo sapiens*** is also ***Homo reparans***', Spelman, ***Repair***, 1.

4 'To repair is an act on the world: to engage in mending and fixing entails a relational world-building that materialises affective formations. It also settles endurance, material sensitivity and empathy, as well as more altruistic values oriented towards the sustainability of life'. Francisco Martinez and Patrick Laviollete, ***Repair, Brokenness, Breakthrough: Ethnographic Responses***, Berghahn, 2019, 2.

5 Law Commission of Canada, ***From Restorative Justice to Transformative Justice Discussion Paper***, Catalogue no. JL2-6/1999, 28, accessed 10 August 2022, www.antoniocasella.eu/restorative/Canada_1999.pdf.

law contemplated the possibility of monetary compensation for damages other than personal injury, as, traditionally, personal injury was considered non-compensable. In the Hebrew law, 'eye for an eye' is the commandment that expresses the idea of a reciprocal or equivalent justice measure. The law of retaliation, in Roman law, assumes the same direction: the person causing the damage must be penalized at an equivalent level to the damage injured.[6] The modern concept of reparation deals with damages of different scopes: the magnitude of the damage, the number of affected victims, and its gravity make the definition of reparation more complex regarding a community or group.[7] Faced with possible damage, every person is obliged to compensate for the damage caused. The notion of reparation in the legal design of society constitutes a fundamental element through which not only to hold responsible whoever infringes the rights or property of another or others, but also establishes as a necessity the care of those who have been direct or indirect victims of a harmful action, such as in the case of global ecological reparation justice. This acquires fundamental relevance in our contemporary interconnected world, where the responsibilities of states, corporations, industries, and communities contribute to all forms of life and their survival on the planet.[8] Reparatory justice is a philosophy and method for settling conflicts, seeking to restore these through a process that

6 Juliana Nanclares and Ariel Gómez, 'La Reparación: una Aproximación a su Historia, Presente y Prospectivas', ***Civilizar Ciencias Sociales y Humanas***, 17:33, July 2017, 59–80, www.doi.org/10.22518/16578953.899.

7 As stated by Professor Margaret Urban Walker: 'The field of application for reparations is broad, comprising cases where wrongs are discretely episodic and the concrete means of repair (for example, monetary compensation) are fairly straightforward, cases of gross and murderous violation of massive numbers of human beings during a specific period of political repression or persecution, and group histories of destruction, dispossession, subjugation and degradation of status that span centuries'. Margaret Urban Walker, 'Restorative Justice and Reparations', ***Journal of Social Philosophy***, 37:3, Fall 2006, 377–395, www.doi.org/10.1111/j.1467-9833.2006.00343.x. For further discussion on Restorative Justice: Federico Lenzerini (ed.), ***Reparations for Indigenous Peoples: International and Comparative Perspectives***, Oxford University Press, 2008. Also: María del Refugio Macías, Gloria Puente, and Isaac de Paz, 'La Justicia Restaurativa en el Derecho Internacional Público y su Relación con la Justicia Transicional', ***IUSTITIA***, 15, 2018, 9–30, www. doi.org/10.15332/iust.v0i15.2084.

8 Olufemi Táíwò, ***Reconsidering Reparations: Worldmaking in the Case of Climate Crisis***, Oxford University Press, 2022.

involves the victims, the victimizers, and the community.[9] Different communities and countries have been demanding or developing reparation, care, and healing processes. Examples of such processes can be found in Colombia's peace process,[10] U.S. Black people's demands for reparations from the United States of America, caused by slavery and its aftermath,[11] Australia's reparations for the stolen generations,[12] the Māori of New Zealand,[13] American Indian nations from North and South American countries demanding the return of their tribal lands, the South African Truth and Reconciliation Commission after the end of apartheid in 1996, the Truth and Reconciliation Commission of Canada documenting the impacts of the Canadian Indian residential school system (2008–2015), or the National Commission on Political Imprisonment and Torture Report (2004–2005) documenting testimonies of those who suffered illegal imprisonment and tortures under the Chilean dictatorship. It is impossible here to unfold the entire and relevant discussion on the critical aspects of this legal concept, but it is an introductory approach to a debate to be had within design practices and their involvement in social, political, and ecological spheres.

Reparatory Design Practices

Reparation should be an essential concept in today's processes of understanding and thinking about design practices, and reparatory practices in design are an important way to enact sustainable changes in the world. In the face of existing damage, the act of reparation seeks restitution that does not entail forgetting the origins of the damage caused. Nor does reparation imply restitution of the original state. On the contrary, it understands that the transformation produced

9 Pablo de Greiff, 'Justice and Reparations', in Pablo de Greiff (ed.), ***The Handbook of Reparations***, Oxford University Press, 2006, 451–477.
10 Macías et al., 'La Justicia', 9–30.
11 J. Angelo Corlett, ***Race, Racism, and Reparations***, Cornell University Press, 2018.
12 Julie Cassidy, 'The Stolen Generations — Canada and Australia: The Legacy of Assimilation', Deakin Law Review, 11:1, 2006, www.doi.org/10.21153/dlr2006vol11no1art230.
13 Lenzerini, ***Reparations for Indigenous Peoples***.

by the damage has created a different reality to which it must adapt. However, this adaptation supposes transformative, relational, sustainable learning. To repair is to heal. Healing is a process of intense care, a period of accompaniment, recovery, and re-bonding.[14] It is a learning process of a reweaving, of an interweaving that, arising from damage, gives shape to new knowledges.[15]

The current global crisis is not a singular and isolated event but the manifestation of a fundamental systemic crisis: a crisis of our relations with nature—that is, with everything that continues to be defined as an externality to our anthropocentric conception of reality, but also a crisis of our interpersonal, social, economic, and political relations.[16] On all these levels, it is undeniable today that the way humans relate to each other and other living and non-living entities is not sustainable; it is not viable in the medium and long term.[17] Consequently, all our efforts should focus on transforming these relationships.[18] How can we focus on transforming these relationships, if not by acknowledging the already existing wounds and the necessity of repairing those injured relational structures? Before further describing the reparatory perspective, it is crucial to understand the grounds from which it relates to a relational perspective.

A sustainable relationship is a performative form of connection that is beneficial for the entities it connects.[19] This means, at a basic level, that a sustainable relationship provides

14 Marcia Krawl, ***Understanding the Role of Healing in Aboriginal Communities***, Report Ministry of the Solicitor General of Canada, 1994.

15 Liliana Parra-Valencia, 'Prácticas y Experiencias Colectivas Ante La Guerra y Para La Construcción De Paz: Iniciativas Sociales De Paz En Colombia', ***Agora U.S.B.***, 14:2, 2014, 377.

16 Bruno Latour, ***Facing Gaia: Eight Lectures on the New Climatic Regime***, Polity, 2017.

17 Arturo Escobar, 'Sustainability: Design for the Pluriverse', ***Development***, 54, 2011, 137–140, www.doi.org/10.1057/dev.2011.28. Also, Enrich Hörl, 'Introduction to General Ecology. The Ecologization of Thinking', in Erich Hörl and James Burton (eds.), ***General Ecology: The New Ecological Paradigm***, Bloomsbury, 2017.

18 Zach Walsh, Jessica Böhme, Brook D. Lavelle, and Christine Wamsler, 'Transformative Education: Towards a Relational, Justice-Oriented Approach to Sustainability', ***International Journal of Sustainability in Higher Education***, 21:7, 2020, 1587-1606, www.doi.org/10.1108/IJSHE-05-2020-0176.

19 Peter Harries-Jones, ***A Recursive Vision: Ecological Understanding and Gregory Bateson***, University of Toronto Press, 1995.

the right conditions for the related entities to maintain their identities and specific forms of existence.[20] A relationship must maintain a mutual and beneficial quality over time to become sustainable. Sustainability here is a porous continuity between situated conditions, organisms, and their environments open to potential contingencies. Therefore, a sustainable relationship is a dynamic connection that adaptively changes over time. Changes in the relationships and the connected entities must evolve in mutually positive adaptation among themselves and the environments they create. Sustainable relationships are, in this sense, the surfaces upon which we must look when we configure reparatory procedures.

Reparatory design practices respond to damages, needs, and existent lacks in the relational spheres of lives. The hypothesis here is the following: reparatory design refers to all those embodied practices that, from a diverse range of materialities and performativities, aim at the composition of spaces of vulnerable knowledge and of resilient methodologies of care, healing, and repair.[21]

Embodied practices are forms of investigative, productive, and prototyping know-how that assume an enactive approach to the manifestation of cognition and creation.[22] The enactive approach understands cognition as arising from a dynamic interaction between any acting organism and its surrounding environments.[23]

Vulnerable knowledges are those fragilized in hierarchical contexts. The cultures of care, for example, so evident in the work of the medical professional bodies during the pandemic,

20 Humberto Maturana and Francisco Varela, ***Autopoiesis and Cognition: The Realisation of the Living***, Springer, 1980.

21 Regarding these three elements of care, healing, and repair, I have heavily relied on three-research works: Tiina Seppälä, Melanie Sarantou, Satu Miettinen (eds.), ***Arts-Based Methods for Decolonising Participatory Research***, Routledge, 2021; and Girija Kaimal and Asli Arslanbek, 'Indigenous and Traditional Visual Artistic Practices: Implications for Art Therapy Clinical Practice and Research', ***Frontiers in Psychology***, 16 June 2020, Sec. Psychology for Clinical Settings, 10.3389/fpsyg.2020.01320. And Heather L. Stuckey and Jeremy Nobel, 'The Connection between Art, Healing, and Public Health: a Review of Current Literature', ***American Journal of Public Health***, 100: 2, 2010, 254–63, DOI: 10.2105/AJPH.2008.156497.

22 Francisco Varela, ***Ethical Know-How: Action, Wisdom, and Cognition***, Stanford University Press, 1992.

but also exposed in other fields such as the educational professional bodies (teachers, assistants, managers), have demonstrated their silent importance in the sustainability of social fabric.[24] The changes in progress evidence the lack of and the need for recognition and development of forms of knowledge that consider relations, languages, and performativities as their territory of democratic production.[25] Resilient methodologies are those that assume the plasticity of the environment as a response to the conditions of damage in which eco-social, geopolitical, human, and non-human migration environments may be found. Creating resilient methodologies implies a reparative design process that assumes beforehand the condition of care for the social, psycho-ecological body in which we operate.[26]

Fake System, Truth Clothes

Manteros is the trademark of a group of street traders in Barcelona. The name comes from the *manta* [blanket][27] they use to offer their products on Barcelona's streets. The history of street traders is long, but it certainly changes when a ravaging urbanist intervention consumes a city like Barcelona. Although

23 'The term enaction underlines the growing conviction that cognition, far from being the representation of a pre-ordained world, is the joint advent of a world and a mind from the history of the diverse actions that a being performs in the world'. Francisco Varela, Eleanor Rosch, and Evan Thompson, ***The Embodied Mind***, MIT Press, 1992. Also in Evan Thompson, ***Mind in Life: Biology, Phenomenology, and the Sciences of Mind***, Harvard University Press, 2007. And Ezequiel Di Paolo and Evan Thompson, 'The enactive approach', in Lawrence Shapiro (ed.), ***The Routledge Handbook of Embodied Cognition***, Routledge, 2014.

24 María Puig de la Bellacasa, ***Matters of Care: Speculative Ethics in More Than Human Worlds***, University of Minnesota Press, 2017.

25 Leah Lakshmi Piepzna-Samarasinha, ***Care Work: Dreaming Disability***, Arsenal Pulp Press, 2018.

26 María De Mater O'Neill, 'Developing methods of resilience for design practice', PhD diss., Northumbria Department of Design, Northumbria University, 2013, accessed 20 August 2022, www.academia.edu/12864324/DEVELOPING_METHODS_OF_RESILIENCE_FOR_DESIGN_PRACTICE.

27 The Manteros' logo was based on both the shape of a blanket, as many Manteros lay their wares on blankets, and the shape of a canoe, meant to symbolize the way many of the union's members arrived in Spain. 'Original Pirate Material: Barcelona's Street Sellers from Own Fashion Label', ***The Guardian***, 7 July 2017, accessed 6 March 2021.

it is beyond the scope of the chapter to unveil the entire landscape of street vendors, suffice it to mention two main elements that converge in the case of Barcelona.

Barcelona is a city that has suffered profound changes particularly since the urban and economic intervention produced by the Olympic Games in 1992. The 'Barcelona model' was born under the auspices of granting the city quality public spaces. A massive transformation was performed by the local and national governments with the support of economic powers. That change provoked a re-arrangement of the way the city was used. From this modification emerged a city for tourism, open to world trade by air and sea. This provoked a significant shock to the inhabitants, who observed the city takeover. One visible aspect directly linked with street trade is the number of tourists, which has produced the emergence of more informal labour in Barcelona.[28] The second element is that Barcelona is a city many immigrants use as a first stage to enter Europe. Even though the city has labelled itself as a Welcoming City for immigrants,[29] they confront the limitations of the existing laws, which push them to take action to support their lives. Street trading is one of the easiest ways to get

28 In 2021, Barcelona closed the year with 4,5 million visitants. 'Barcelona cerró el 2021 con 4,5 millones de turistas con una "clara tendencia" a la recuperación', ***Europapress***, 27 January 2022, www.europapress.es/catalunya/noticia-barcelona-cerro-2021-45-millones-turistas-clara-tendencia-recuperacion-20220127185713.html. In 2019, before the pandemic, the cypher was of 11 million. This situation changed during the pandemic, but after the end of the restrictions, the city became an important target for low-cost tourism again. Just until last July 2022, Barcelona had received 5,4 million visitants. Xavier Marcé, Councillor of Tourism and Creative Industries of Barcelona, considered these cyphers to confirm Barcelona's recuperation as an international spot. He also stressed that the return of tourism would directly impact the creation of stable jobs and that the Barcelona model would continue to commit for quality and sustainability, www.elpais.com/espana/catalunya/2022-08-25/barcelona-supera-el-millon-de-visitantes-en-julio-y-consolida-la-recuperacion-turistica.html.

29 'What is special about Barcelona is that the city has been a space of experimentation, in which the politics of welcoming have come to the test. The presence of a strong social and political will to solidarity has not abolished the contradictions solidarity city activists and city councillors face elsewhere but created a space of learning. Why, for instance, has the city government that wanted to close the detention centre seen itself pressured to act against migrant street vendors?' Bue Rübner Hansen, 'Barcelona–City of Refuge and Migration', ***Solidarity Cities in Europe***, 2019, www.academia.edu/38377339/Barcelona_City_of_Refuge_and_Migration.

daily money. Other supporting informal labour comes from the metal rubbish collection, which is later sold informally.[30]

City councils of different party lines have combated street trading. In 2015, the popular street vendors' union was born. The act was celebrated at the Art Santa Mónica Centre, one of the State's public cultural spaces in Barcelona, where at least eighty 'Manteros' attended.

In July 2017 the Manteros Association launched its trademark Top Manta 'with the aim of improving our living conditions as a collective'.[31] This is an essential premise of Manteros' demands. By producing their own products, they will also loosen the hold of the market of imitation products. The creation, design, and production processes allow them to legitimize their activity, which is a form, as they used to say, of getting off the streets and ending their marginalization. Top Manta aims to become a social enterprise working within the fashion industry. This first process was possible thanks to the support of a crowdfunding campaign.[32] As they explain in the promotional video, for nine months, with the support of PlayGround Do, they were formed in fashion design. The first six models were based on their own experiences narrating their travel from Senegal. This first collection starts their collective project as a legal association. They also highlight in their publications and interviews that the Top Manta project is a way to legally obtain the right to work.

The reparatory design practice of the Manteros and Top Manta case convokes the materials' use as the continent of their narratives. The products reflect both the organizational

30 The Manteros are mostly immigrants from Sub-Saharan countries, such as Senegal, Côte d'Ivoire, Tanzania, and Gabon. As Professor Papa Sow exposes, the 'emigration to this country (Spain) had only interested migrants from former colonies, especially from the American continent. In reality, black Africa, apart from the only former colony present, Equatorial Guinea, was not part of the framework of migration to Spain. This destination was more a place of passage or transit to northern Europe'. Papa Sow, 'Prácticas Transnacionales y Espacios de Acción (wáar) de los Senegaleses en España' in Ángeles Escrivá and Natalia Ribas (eds.), ***Migración y Desarrollo***, Colección Politeya, CSIC, 2004, 235–254.

31 'El oro negro de la ciudad', Sindicato Manteros, accessed 15 August 2022, www.manteros.org.

32 'Top Manta · Ropa legal hecha por gente ilegal', Sindicato Popular de Vendedores Ambulantes de Barcelona, accessed 19 September 2022, www.goteo.org/project/top-manta-bcn.

response to their necessities, in terms of both labour rights and more urgently in terms of life. The designs and products are composed under a resilient methodology. The design activity embodies the potential change they are forming for themselves without forgetting their past. In this sense, the products of Top Manta are politically engaged. They express their memories as registers of what lives within them as a community, but it also expresses the struggle of human lives considered illegal in the current structural system:

> **(the Manteros) must connect a common cultural baggage translated into *moodu-moodu*[33] knowledge, generate an intergenerational link between migrants and newcomers, essential to transmit the know-how of the manta; but it is also necessary to sustain an extensive support network (especially affective but also material) that extends as far as Senegal, where the families of the Manteros often depend on the work of the latter, in whose migrant children they have placed their hopes.[34]**

The Manteros develop a vulnerable know-how based on the situated knowledge they build through their daily adaptive experiences. They have developed strategies and skills based on how they use the streets to avoid the authorities, learning to reinhabit urban infrastructures as a refuge. At the same time, they had to learn and master the languages of politics, institutions, and organisations, finding ways to manage their disadvantaged state to their benefit: 'This wisdom, which is neither systematised nor "visible" (…) has the power to transform structures as visible,

33 The concept of 'moodu-moodu' refers, in Wolof, to the 'the illiterate and pious informal migrant' as proposed by Vincent Foucher and Tarik Dahou, 'Senegal since 2000. Rebuilding Hegemony in a Global Age' in Lindsey Whitfield, ***Turning Points in African Democracy***, ed. Abdul Raufu Mustapha, Boydell and Brewer, 2009, 13–30. For the Senegalese sociologist Malick Ndiaye, the moodu is not only a mechanism of redistribution of goods but an economic rational, see Malick Ndiaye, 'Les Moodu Moodu ou l'Ethos du Développement au Sénégal, Tome II', ***Presses universitaires de Dakar***, 1998, 355. Also Christine Ludl, 'To Skip a Step': New Representation(s) of Migration, Success and Politics in Senegalese Rap and Theatre', ***Stichproben, Wiener Zeitschrift für kritische Afrikastudien*** 14, 2008, 97–122, stichproben.univie.ac.at/fileadmin/user_upload/p_stichproben/Artikel/Nummer14/Nr14_Ludl.pdf.

34 Horacio Espinosa, 'El Mercadillo Rebelde de Barcelona. Prácticas Antidisciplinarias en la Ciudad Mercancía', Quaderns-e de l'Institut Català d'Antropologia, 22:1, 2017, 67–87, www.raco.cat/index.php/QuadernseICA/article/view/329856.

institutionalised and systematised as the design of a city and its urban planning'.[35]

The latest news regarding the Manteros is their future participation representing Catalonia and the Balearic Islands within the collateral events of the eighteenth Venice Architecture Biennale in 2023. The winning project is entitled 'Following the Fish' and will address, through the vision of the Manteros, issues such as 'migratory transits, the privatization of public space, feminism, the fight against racism and food sustainability'.[36]

Autofabricantes

The collective Autofabricantes[37] was created in 2015 by a group of designers as a community research project to research and develop open source myoelectric and mechanical hand prostheses for children. Autofabricantes facilitates the community to design, produce, and maintain hand prostheses; its approach puts emphasis on care of both the formation of social ties and between communities as well as in the repair of these—restoring and producing new ways of collective empowerment. I suggest that the reparatory perspective, in this case, does not correspond only to the material technology of the prostheses. It happens instead through the increasing autonomy it provides to people with functional diversity—in this case, children who are invited to creatively participate and get involved in the design processes of the prostheses themselves. The reparatory dimension happens through the productive

35 Espinosa, 'El mercadillo'.

36 Antoni Ribas Tur, 'El Sindicat de Manters Representarà l'Arquitectura Catalana a la Pròxima Biennal de Venècia', ***Ara Balears***, 21 September 2022, www.arabalears.cat/cultura/sindicat-manters-representara-l-arquitectura-catalana-proxima-biennal-venecia_1_4495764.html.

37 'Comunidad Autofabricantes', Autofabricantes, accessed 15 August 2022, www.autofabricantes.org/. Autofabricantes is formed by a group of designers coming from different fields. I will mention here just two of the members: Francisco Díaz is the coordinator and promoter of Autofabricantes, and Camila Maggi, Architect and Designer, has worked in citizen laboratories such as Medialab Prado (Madrid) and LABIC (Colombia).

capacity Autofabricantes creates for nearby communities and materials, giving the autonomy of knowledge, manufacturing, and care back to local social networks and connecting with the rest of the communities to exchange what has been learned in the process.

Autofabricantes seeks to redefine the conceptual framework of what a normal body is or even what a standard body should be. Currently, the model is dominated by a Modernist view that sees health as a domain to be treated by, from, and through the state. Once an individual's health situation was considered under the responsibility of the state, public institutions and procedures were created that allowed the treatment and care of unhealthy bodies. The aim was the reparation of the 'broken or ill' body in order to facilitate its return or rehabilitation to a productive society. Although the historical analysis of biopolitical parameters is beyond the remit of this chapter, suffice it to say that the creation of the notion of the 'sick' is a foundational element in the construction of the Modern project. The anomaly, and therefore its counterpart, normality, ideologically define the differences between those who are productive within the modern State (as full participants within it) and those who are not (and who therefore represent a problem to be solved).

Autofabricantes works within this broader referential scope, essentially endorsing the autonomy of a body that can decide upon the characteristics and qualities of those biopolitical functional necessities within its conditions. In our health and care system, the 'patient' cannot participate in technical assistance's functional, aesthetics, and formalities.[38] Training and rehabilitation have been under the responsibility of the State care system, which assumes preconceived and standardized notions of what it means to have (or to be) a normal (and productive) body. Everything that lies outside of this standard is considered something that should be

38 Camila Maggi and Francisco Díaz, 'Hacer el Cuerpo Común. Autofabricantes: Diversidad, Tecnología y Afectos', ***Inmaterial: Diseño, Arte y Sociedad***, 4:8, 2019, 13–31, www.doi.org/10.46516/inmaterial.v4.60.

repaired but conditioned to the given structures of sociality and environment.[39]

Autofabricantes' projects and processes expose questions that go beyond the narrow understanding of a design practice existing to 'solve problems'. Beyond developing technical support for functional operability, Autofabricantes' approach allows for the communities involved to begin questioning the biopolitical relations hidden between the uses of technologies, methodologies, and bodies. This vulnerable knowledge, produced in situ by the participants and the designers, emerges as a blurred capacity of autonomous imaginaries that feeds the creation of resilient methodologies. Autofabricantes has developed critical research work through their research space LATE, Laboratorio Tecnología, Arte, Cuerpo y Dispositivos Extracorporales [Technology, Art, Body, and Extracorporeal Devices Laboratory], which as they state is 'a new programme of research, reflection, experimentation and artistic creation focused on the body, functional diversity and technical assistance or extracorporeal devices, with technology as a working vector'. Autofabricantes considers its work a community-thinking space where design, technologies, performance, and politics intersect; it aims to produce alternatives towards collective creativity, autonomy, and quality of life.[40]

39 'a traditional vision of the medical model of functional diversity, in which a different person is presented as someone biologically imperfect who needs to be restored and "fixed" in order to reinstate theoretical patterns of "normality', which have never existed, and which are not likely to exist in the future either, precisely due to medical progress', Javier Romañach and Manuel Lobato, 'Functional Diversity, a New Term in the Struggle for Dignity in the Diversity of the Human Being', ***Independent Living Forum***, 2005, accessed 3 March 2022, www.disability-studies.leeds.ac.uk/wp-content/uploads/sites/40/library/zavier-Functional-Diversity-Romanach.pdf.

40 'LATE. Laboratorio Tecnología, Arte, Cuerpo y Dispositivos Extracorporales', Autofabricantes, accessed 18 August 2022, www.autofabricantes.org/investigacion/late/.

DUAE is a collective of two Italian artists based in Barcelona: Luna Coppola and Silvia Campidelli. In 2018, they embarked on a multidisciplinary research project at the intersection of art, ecology, and science focused on urban sustainability.[41] This artistic and design research project worked explicitly with a non-human living body, a natural entity, the Besòs river. DUAE explored and researched the river and its surroundings for two years, considering it a crucial threshold where social, political, environmental, and emotional elements were interconnected. The Besòs river is a natural frontier separating Barcelona and Sant Adrià del Besòs. Between the 1970s and 1980s, it was considered one of the most polluted rivers in Europe. In 2004, during the first Fórum Universal de las Culturas, which focused on sustainable development, the conditions for peace, and cultural diversity, the urban remodelling plan began the transformation of Besòs river into a public park.

DUAE considered the importance of the river as a connecting ecosystem, as a sentient witness of social and political changes in the region. Herein lies the reparatory aspect of DUAE's actions. The main initial framework of their research was the environmental sustainability of the Besòs river. This led them to take a scientific approach, which produced the amazing discovery of a universe of creatures living and composing the river. They found that the river itself had an immune system based on its bacterium environment, which was a natural defense against pollution. This opened the research to a New Materialist approach, considering the different entities conforming and organizing the river beyond human factors. What DUAE developed was a cultural study of the river's body. They listened to, recorded, and lived the river, collecting natural objects and producing different forms of data. They searched for support and help from scientific

41 'Besòs: A Noble Ecosystem' was a project that participated in the European Escape programme promoted and developed by CICLO Platform of Photography (Portugal) and Triennial of Photography Hamburg, accessed 22 September 2022, www.duaecollective.editorx.io/mysite-2/besosanobleecosystem.

and academic institutions and local cultural entities, with which they designed a learning landscape of conversations to interpret their newly sedimented knowledge. The process became a design of organizational relationships within the river system, the organisms living with it, and the human cognitive environment. At the end of a colossal journey that took them two years of research, DUAE exposed the artistic process.[42] But that exposition was not just an exhibition. This exposition considered a complex network of archaeological and artistic pieces, arrangements, installations, sounds and images, as well as social actions and participatory events where a new audience could grasp the complexity of the studied entity. It is mostly here that the reparatory aspect of their artistic and design practice is verifiable. They do not participate in any material reparation of or intervention in the river. Nevertheless, they produce a reparatory process of the entity beyond its given human understanding, creating a network of cognitive approaches following a new relationship between humans and the river. In other words, it was a reparation of our very relationship with the river. It is a reparation of the relational forms between humans and the non-human microcosmos embodying the river as a whole, in constant change. Through a set of cultural tools, DUAE reconstitutes and reframes and redesigns the methodologies and procedures to be used in the necessary new deals with our environmental entities. It provokes reflection on how we should repair our relationships to facilitate sustainable relationships and how we should critically engage and connect with each other.

Conclusion

One of the areas that the recent global health crisis has most severely shaken is probably the very concept of society itself. Contemporary societies have been tested in all areas of their productive, epistemic, political, and economic relational organization. Life forms, in all their connective complexity,

42 The exposition was titled 'Besòs: A noble Ecosystem', and it was held at Fabra I Coats Centre d'Art Contemporari, Barcelona, 24 January–3 March 2019, www.barcelona.cat/fabraicoats/centredart/es/content/bes%C3%B2s-noble-ecosystem.

have been disrupted. A post-pandemic society appeared, demanding cultural and practical changes that are still in progress. What kind of societies are we becoming through such radical changes in fundamental areas such as energy, geopolitics, and ecology? Moreover, how will they affect areas like education, social psychology, cultures, customs, living spaces, and our bodies? If these changes are in progress, if we feel this way, how and in what way must design and the art respond? What are the epistemological, scientific, and technological tools that design practices must prototype, explore, and investigate? I argue that some of the projects described above effectively respond through design practices. What reparation means for them is not just a way of fixing something bad or broken. Through their actions, these projects go beyond the formality of production, creating methodologies that enact social changes. These design practices are prototypes tacitly impacting our cultural environments. The relationships established in their design processes are embedded and embodied in the memories and experiences of the communities involved. A reparatory design perspective is one that focuses on the networks and relationships built between communities, design practices, and everyday lives.[43]

43 Guy Julier, Mads Nygaard Folkmann, Niels Peter Skou, Hans-Christian Jensen, Anders V. Munch (eds.), ***Design Culture: Objects and Approaches***, Bloomsbury, 2019.

A Vocabulary for Digital Commoning Methods

Juan Gomez &
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Gregoire Rousseau is an artist and educator based in Helsinki. He holds a degree in Electrical Engineering and a Master's of Fine Arts from Uniarts (Helsinki) and is currently a doctoral candidate at Aalto University (Espoo, Finland), focusing his research on 'Commoning Education, Educating the Commons'. Besides lecturing on art within technological space, Rousseau's artistic work questions the role of the machine, the algorithm within the digitally controlled society, and the complexity of the neoliberal interests in relation to public knowledge, to the commons within the technological space. He is the co-founder of Station of Commons. Rousseau exhibits regularly both in Finland and abroad. Recent exhibitions include: 'Manifesta13' and 'documenta fifteen' (at Ok11, Helsinki; Kunstpavillon, Munich;Kaskl, Berlin; and documenta Institute, Palais des Beaux-Arts Museum).
(www.rousseau.fi, www.stationofcommons.org)

'Station of Commons' was initiated in early 2020 as a collective of artists, designers, and programmers to stand for the re-appropriation of technology within the public space. It situates itself now as an independent research project on digital commoning practices. Positioned at the intersection of art and design practices and radical technology, Station of Commons questions how collaborative processes embedded in technology can find form in new knowledge and know-hows within, against, and beyond capitalist modes of production. The current neoliberal processes of extraction and appropriation over digital technology produces new spaces of objective contradiction between common interest and very narrow ones. These contested spaces[1] operate as possibilities for the manifestation of commoning practices, for thinking and engaging in terms of art, design, and coding practices.

Departing from Station of Commons practice at large, this chapter inquires into the conditions and implications for commoners' actions operating in the technological space. How can digital commoning practices rethink another model of shared empowerment situated in time and space, unique to its agents and communities? The methods for collective organizations operate as core research of this article. It examines 'lumbung radio' as a situation of work collectively thought with the artist collective ruangrupa in the context of art exhibition 'documenta fifteen'. lumbung radio is a collective radio co-created with its participants as well as its operating infrastructure. With the intention of expanding the methodologies of collective artistic work, this chapter is written as a glossary of key words that are fundamental to the creation and conceptualization of lumbung radio as a collaborative project and that could serve as reference for collective artistic and research work. Finally, the chapter argues that Digital Commoning practices refers to infrastructural and conceptual work operating together and elaborates in the sense of the multitude[2] as proposed by political philosophers Antonio Negri and Michael Hardt.

1 Stavros Stavrides, ***Common Space: The City as Commons***, Zed Books, 2016.

2 Their book ***Commonwealth*** advocates for a multitude that must learn how to re-appropriate the Commons to become an actual form of political organization. The political body, as multitude, finds form in digital space as a collective practice. Michael Hardt and Antonio Negri, ***Commonwealth***, Harvard University Press, 2011.

The necessity for artists to resist capitalist extraction operated by the market found form in collective organizations starting at the beginning of the previous century. The avant-garde movement, such as the Futurist one, revealed the power of a new type of intellectual formation: collectivity.[3] Later, the Dadaist, Surrealist, and Situationist movements, among many others, formed groups against the artist being branded as an individual genius working under legal contract for commercial and institutional venues. The relation between the collective, as a political and social body/structure, and the space where the collective can operate, experiments with the ideas of autonomy, resource, governance, knowledge, and related means of production. Artists collectively want to think of this self-organized space as a laboratory, an extended studio for speculative inquiries, and a space in the making open to develop/implement social and political interventions.

The collective ruangrupa (curator of documenta fifteen) founded 'Gudskul' as a platform for collective study to provide an infrastructure for local contemporary art. This so-called 'artist-run gallery' wants to distance itself from the exhausted model of the project inspired/copied from an industry that is defined by limited time and budget. The overall recent rapid development of technology/Internet/online tools questions the position of this other alternative/modern space in relation to the digital culture (and even more since COVID's interference). The possibility for a radical and social imagination must venture forth to find form in the digital space.

Drawing from the definition of Digital Commons by Felix Stalder,[4] we believe that transdisciplinary experiments within art and design can help foster new collectively imagined realities for a more just and equitable networked economy. Prior to lumbung radio, we curated the exhibition

3 Lawrence S. Rainey, Christine Poggi, and Laura Wittman (eds.), ***Futurism: An Anthology***, Yale University Press, 2009.

4 Felix Stalder. The Digital Condition. Cambridge: Polity Press, 2018.

'Digital Commoning Practices'[5] (2021) that questioned the manifestation of radicality in the physical space that departed in the digital space. The opening of the exhibition coincided with one year of experimentations on audio and video streaming, broadcasts using open-source tools, and online libraries. The reason for all these experimentations were ignited by the first lockdown in 2020, in order for us to continue our work as sound artists, performance makers, and creatives in times of isolation and still resist the hegemony of narrow private interests in the technological space.

An audio stream is fragile online data. Contemporary methods of open-source streaming are based on a server-client[6] model where the sound wave generated by the artist is mediated through a server that creates a mounting point for listeners to connect and listen to the audio stream. Taking this basic technical understanding of streaming, the infrastructuring process in lumbung radio is not hierarchical but heterarchical,[7] as the infrastructure built on top of browsers, phones, and other objects of connection is thought through in a participative process considering the socio-technical conditions of commoners. In this regard, the audio experience is thought

5 The exhibition 'Digital Commoning Practices' was held 6–28 March 2016 in the Oksasenkatu11 Gallery, (Helsinki, Finland) with artistic and discursive contributions by: Heta Bilaletdin, Juan Gomez, Pahat Kengät, Sam Hart, Tommi Keränen, Malin Kuht, Constantinos Miltiadis, Marcell Mars, Martino Morandi, Jara Rocha, Gregoire Rousseau, Selena Savic, Dubravka Sekulic, Femke Snelting, Cornelia Sollfrank, Stavros Stavrides, Nora Sternfeld, Samuli Tanner, Värvöttäjä, research.aalto.fi/en/publications/station-of-commons-digital-commoning-practices.

6 Markus Krajewski and Ilinca Iurascu. ***The Server: A Media History from the Present to the Baroque***, Yale University Press, 2018.

7 David Bollier and Silke Helfrich, ***Free, Fair, and Alive: The Insurgent Power of the Commons***, New Society Publishers, 2019. 'Heterarchy is well-explained by the original Greek ετεραρχία: the term heter means "other, different," and archy means "rule." In a heterarchy, different types of rules and organizational structures are combined. They may include, for example, top-down hierarchies and bottom-up participation (both of which are vertical), and peer-to-peer dynamics (which are horizontal). In a heterarchy, people can achieve socially mindful autonomy by combining multiple types of governance in the same system. For example, a hierarchy form may exist within a heterarchy. Heterarchies are not simply peer-to-peer distributed ways of organizing, which are often hampered by a lack of structure. Nor is heterarchy the simple opposite of hierarchy. Rather, it is a hybrid that allows for greater openness, flexibility, democratic participation, and federation. When tasks are made modular, it becomes easier for heterarchical governance structures to flourish'.

of as an act of commoning through a shared experience and the digital infrastructure manages the distribution of the stream to serve the commoning process, rather than an individual one. This infrastructuring process of audio is not to be decoupled from its potential as a medium that enables animate contact, producing complex ecologies of matter and energy, subjects, and objects.[8]

Lumbung

Lumbung refers to the practice of communal rice barns in rural Indonesia, ruangrupa's country of origin. Once farmers of a region complete their harvest, they share their surplus with the community. The farmers are not obliged to provide a certain amount, or a specific proportion of their production. They voluntarily put in the common pot what happens to be in excess in their own production. This common pot then supports less-fruitful harvests. This practice is based on trust, sharing, and building together. As mentioned in the documenta fifteen handbook, the lumbung values are 'generosity, humour, local anchoring, independence, regeneration, transparency and sufficiency'.[9]

lumbung radio is an online community radio project that has its starting point at documenta fifteen. As an open online broadcast, lumbung radio is comprised of an inter-local network of distinct radios and audio practices. It operates in no specific time zone and streams a wide variety of languages, music, and art. Each participating radio station or collective supports its own means of production, way of thinking, learning, and sharing. lumbung radio operates as a decentralized network of nodes that uses the Internet

8 Brandon LaBelle, ***Sonic Agency: Sound and Emergent Forms of Resistance***. Paperback edition. Goldsmiths Press Sonics Series, Goldsmiths Press, 2020.

9 A. K. Kaiza, Alvin Li, Andrew Maerkle, Ann Mbuti, Annie Jael Kwan, Ashraf Jamal, Wong Binghao, Camilo Jiménez Santofimio, Carine Zaayman, Carol Que, Chiara De Cesari, Dagara Dakin, Enos Nyamor, Farhiya Khalid, Ferdiansyah Thajib, Hera Chan, Joachim Ben Yakoub, Krzysztof Kosciuczuk, Marta Fernández Campa, Max Kühlem, Nuraini Juliastuti, Övül Ö. Durmusoglu, Pablo Larios, Ralf Schlüter, Rayya Badran, Skye Arundhati Thomas, and Tina Sherwell, Documenta Fifteen Handbook: English, Hatje Cantz, 2022.

without its hegemonic agency. The intention is to produce an audiophonic common space built on the multiplication of the existing practices of its contributors. The radio runs on open-source infrastructure and is self-hosted on a dedicated server. The program comprises both relays and original contributions by its nodes, assembled via timesharing. lumbung radio's network gathers over twenty collectives, active in radio and sound practices.

The server performs a key role in the practice of sharing resources at large. The server implements all the instances that lumbung radio collective uses on a regular basis. Among the many instances the server provides, we highlight: the website and email server, the audio server, Jitsi conference solution, Cryptpad for secure text editing, Jamulus for real time online jamming, Nextcloud for file sharing. The website and audio are located in a professional server company, while the file sharing and other experimental instances are installed on specific machines (RaspberryPi for Nextcloud) in our own studios. We guarantee security by limiting the access rights to one qualified person in the Station of Commons collective. Indeed, the server administration happens to be a very sensitive issue as it concerns the pillar of many of our activities. These instances situated in the server result from a process of the determination of our actual needs, experimentations, failed and successful installations. This on-going process of new instances produces a double fold action. First, it situates the space where we meet, discuss, exchange, and as such work together. Then, the second action is reflective: this infrastructure produces a work on the collective itself. The infrastructure forms the collective as much as the collective shapes the infrastructure.

Station of Commons built a solid digital infrastructure that provides an exceptionally reliable audio stream. This determines the quality of access offered to listeners. One can listen to the stream using any common phone or computer. There is no requirement for high-end equipment, nor strong bandwidth internet to listen to an audio stream. The gesture of commoning happens by sharing artistic work without a need of surplus material, neither software nor hardware. Moreover, one connection to the server may be more than one listener. The audio stream departs from the sound artist to the server,

until it transforms again into the analogue form. The same audio wave is then played on loud speakers across the world for a local mingling time. This act of sharing, which does not reduce the received part from another, produces a situation of collective counter strategy within the digital space.

Acknowledgement

Participants of lumbung radio include community radios, professional musicians, artists, designers, and curators, among others; the singularities of each perspective they bring is one of the shared resources that we strive to maintain. Station of Commons is positioned as a designer of relationships, taking an in-between position that allows for the full potential of this relational space of lumbung to escape definitions of being inside or outside: a parergonal space[10] that persists in its non-defining qualities helping preserve the singularities thanks to the intersubjectivity of the agents that inhabit it. This place was both mediated by online meetings and a shared calendar.

The documenta fifteen prompting of Lumbung implied an experimental way of organizing, where it was mainly collectives that participated in the discussions through extensive forms of 'assemblies' that took place prior to the key moments of the exhibition. How does one define 'we' and its potentialities based on the difference of others? What was to be shared or not? Since sound was the first common thread among us, it seemed to be a valuable point of departure to 'establish a ground of negotiation rather than one of affirmation of what is shared'.[11] The subjectivity and diverse practices were discovered

10 Jacques Derrida, ***La Vérité en peinture***, Champs 57, Flammarion, 1978.

11 Massimo De Angelis and Stavros Stavrides, 'On the Commons: A Public Interview with Massimo De Angelis and Stavros Stavrides', ***e-flux Journal***, 1 June 2010. 'We have to establish a ground of negotiation rather than a ground of affirmation of what is shared. We don't simply have to raise the moral issues about what it means to share, but to discover procedures through which we can find out what and how to share. Who is this ***we***? Who defines this sharing and decides how to share? What about those who don't want to share with us or with whom we do not want to share?', www.e-flux.com/journal/17/67351/on-the-commons-a-public-interview-with-massimo-de-angelis-and-stavros-stavrides/.

throughout the process of worlding[12] and a map of actors located in different parts of the world was drawn, showing different worldviews and interests; those actors also invited others, creating a network that expanded beyond the initial group of participants. Although sound is immaterial as a medium, it is conditioned and subjected to time. Time became important as it not only determined the choice of tools to be infrastructured, but also the time to schedule for our meetings to take place. In this sense the digital commoning ritual of meeting is also limited by world distances.

In practical terms, this allows for the 'non-expert' to take voice in such an open environment for sharing their contributions—such as sound recordings, visual design, technology, and stories of past experiences that relate to all participants. In this regard, the whole ecosystem of inhabitants/communities, interactions, technologies, and points of encounters were taken into consideration. Keeping in mind that they will also impact us in a system of circularity and collectively, these tools will also shape our rituals, ways of doing, and modes of being.[13]

Process

The commoning operative process departs from the standpoint that every participant learns from one another in the making of a common objective. Apparently, trivial questions may trigger new perspectives on common-day tools. The newcomer, because of the specificities of their own practice, operates a reflective gesture on the designed use of the tool. This process is an exchange of knowledge and know-how between practitioners that transforms into mutual learning. The communication unpacks the problems and develops solutions in a dialogical movement. This constant shift of positions produces the process of performativity within the technological

12 Arturo Escobar, ***Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds, New Ecologies for the Twenty-First Century***, Duke University Press, 2018.

13 Escobar, Arturo. ***Encountering Development: The Making and Unmaking of the Third World***, STU-Student edition, Princeton University Press, 1995.

space, whereas a digital common is being designed. The process of making/working together manifests beyond a technical achievement and produces a bond based on mutual acknowledgement.

lumbung radio collective's effort bases itself on the participation of a multitude[14] of radios, where each one defines their practice based on their intentions and the impact they hope to achieve. Among all the participating radios, technical discussions were brought up early-on regarding the means of production as of what technologies were used to stream and also what processes were put in place to operate their radio. 'Critical Making', as defined by Matt Ratto, is a process of creation where the designed object is not intended to be exposed, but where the process ignites a novel understanding of the system in which it is created. What is valued is the 'making experience'. The formats of collective research given by the concept of Lumbung that were taken as a basis for the lumbung radio allowed for the formats of co-creation to be open ended, and in contrast to other collaborative commissioned projects, its precise form was not established. As part of the process, however, it was important to recognize the current production tools that were put in place for the different participants to operate their radio; this was exchanged in the weekly meetings, creating a consciousness of the practical tools put in place for lumbung radio.

Conclusion

This glossary of key words and phrases intends to invite and discuss the vivid constellation of practices hidden behind apparently simple words. The precise meaning, or what a dictionary provides, would only restrict a collective practice in the making situated in a specific context. The words selected to build/design this short glossary reflect the discussions,

14 Michael Hardt and Antonio Negri, ***Commonwealth***, Harvard University Press, 2011. 'When we speak of intersections that contribute to the making of the multitude, we have in mind something different from what is traditionally conceived of as alliance or coalition. The multitude is composed through the encounters of singularities within the common'.

meetings, or formal presentations during the last years. They operate as conceptual articulations to think about how commons can find form embedded within radical technology and collective design. Radio, as a form of such collective organization, produces a social space based on decentralized means of production. During documenta fifteen, lumbung radio archived over fifty performances, concerts/events, and discussions/panels and is actively still used as a space for experimentation for several fields. First, on conviviality through Peer-to-Peer technologies (mainly archiving and for infrastructuring). Secondly, as a platform for imagining new futures where communities practice the design of themselves or the design of a learning system about themselves.[15] Finally, as a space for commoning through radiophonic experiences and their potential as enablers for criticality on the architecture of collective decisions.

15 Arturo Escobar, ***Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds, New Ecologies for the Twenty-First Century***, Duke University Press, 2018.

Taking Back Our Commons: Social Media APIs as Subversive Tools

Cyrus Khalatbari &
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The world wide web (WWW), initially defined by its creator Tim Berners-Lee as a non-centralized global system[1] eradicating geographical, social, racial, and political boundaries, is now substantially regulated by a handful of private actors, namely Amazon, Meta, Alphabet, and Twitter.[2] Centralized and operating from the homogenous landscape of California's Silicon Valley, these foundational internet corporations share similar capitalistic agendas and intentions of digital growth, expansion, and control.[3] From influencing the organization of our desktops, the pull down gesture we deploy repeatedly to retrieve fresh content, and the filters that make our lattes look 'just so', these companies have woven themselves deep into the fabric of our everyday lives.[4] Indeed, it is the depth and complexity of this interweaving that has led to a WWW and underlying Internet that is far from being a commons. The production and use of specific interconnected code-based interfaces where our data is shared and updated reinforces a related message: end users have little agency; we are but data points within an ocean of big data. The investigation of such interfaces, known as Application Programming Interfaces (APIs), reveals the technical operations that major internet platforms deploy in ways that reinforce surveillance and control. In this paper, we show how the digital and (often unseen) physical infrastructure implied by APIs may be productively leveraged, reappropriated, and detoured by designers and artists to destabilize the grip key platforms have had on the Internet commons.

The contributions of this chapter unfold in the form of three sections, each addressing a foundational theme in the context of the digital commoning debate and practice. The first examines how designers can use and detour metadata accessed through APIs to highlight and subvert the anti-commoning opacity and surveillance strategies employed by

1 Tim Berners-Lee, 'Information Management: A Proposal', 1989, accessed 30 September 2022, www.w3.org/History/1989/proposal.html.

2 This list is here sorted by Market capitalization. For more information, see: www.companiesmarketcap.com/internet/largest-internet-companies-by-market-cap/.

3 Ulises Mejias, ***Off the Network: Disrupting the Digital World***, University of Minnesota Press, 2013.

4 Mark Weiser, 'The Computer for the 21st Century', ***Scientific American***, 265:3, 1991, 94–104.

these platforms. The second probes the potential of using API streaming functions to make visible and expose their logics of seamlessness and centralization—logics that impede our ability to observe and critique the material and ecological implications of our data processing by these digital blackboxes.[5] The third section bridges these previous API subversions by addressing the importance of designing for seamfulness to support critical reflection and digital commoning practices.[6] Finally, the chapter places these subversion hacks in dialogue with the emergence of new social media propositions and platforms that, addressing our needs for web commons, place openness and decentralization at the core of their design and engineering decisions.

Application Programming Interfaces to Expose Opacity and Surveillance

Social media platforms are structured around the logics of capitalistic surveillance[7] and control. These logics, foundational for economic growth and expansion, target us with personalized ads and content to keep us active, stimulated, and hooked. But through design's sleight of hand at the user interface (UI) and user experience (UX) level, users are persuaded to focus on their singular experience on the platform as opposed to how their data is processed, sorted, and combined through APIs to become our data writ large. One oft-employed strategy is minimalism, applied at many levels of UI/UX, including how few clicks it takes to post new content, as well as the individualized content of social media feeds. An uncritical response to platform minimalism might be relief at reduced digital clutter in a world overburdened by content. But minimalism is a double-edged sword: it conveniently hides contextual detail on how underlying platform algorithms operate.

5 Garnet Hertz and Jussi Parikka, 'Circuit Bending Media Archaeology into an Art Method', ***Leonardo***, 45:5, 2012, 424–430.

6 Matt Ratto, 'Ethics of Seamless Infrastructures: Resources and Future Direction', ***The International Review of Information Ethics***, 8, December 2007, 20–27.

7 Shoshana Zuboff, ***The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power***, Profile books, 2019.

To subvert the surveillance and control exercised by these platforms, we propose looking at the underlying structures and protocols employed by their APIs. Specifically, we propose examining a form of data structure made publicly accessible through APIs: metadata.[8] Metadata, which is not immediately accessible in the platform's default UX, is a central element for capitalistic surveillance and control: it explains what keeps us 'hooked' in terms of personalized feeds. Take, for example, the metadata of an Instagram post. Accessing and reading this metadata—as a digital container storing hidden geographical, temporal, and semantic information about the user's post—reveals how these contents are, inside the broader platform, attached to a broader ecosystem of links, references, and connections. Understanding how metadata conveys highly specific information about us can give us more insight into the way our data, in turn, feeds platform algorithmic surveillance and control. Where these crucial code interfaces are hidden and obfuscated by minimalist aesthetics and usability, we argue then for the potential of exposing these objects through design; reusing and hijacking such data in order to regain agency on how social media platforms operate. Moreover, we posit that the hacking and subversion of this metadata can be used as a foundational starting point to foster our debates gravitating around these platforms' lack of net-neutrality[9] and the urgent need for digital and web commons.

Exposing and hijacking the conditions of platform surveillance and feed personalization through the (re)use of metadata is at the core of Dries Depoorter's project 'The Follower' (2022).[10] In this satirical work, the artist extracts Instagram images as well as their metadata, with the help of computer vision, to then pair these with corresponding surveillance camera (CCTV) footage based on location and timestamp information. This makes it possible to pair, for example, CCTV footage from Times Square in NYC with Instagram metadata describing matching locations

8 The Instagram (Meta) metadata API can be accessed here: developers.facebook.com/docs/instagram-api/.

9 Tim Wu, 'Network Neutrality, Broadband Discrimination', ***Telecomm. & High Tech. L.*** 141, 2003.

10 The project can be accessed here: www.driesdepoorter.be/thefollower/.

and timestamps, and to then search for human silhouettes corresponding to those featured in Instagram posts. The project's final output shows the original Instagram post next to a video capture of the scene where the photo was taken and uploaded by the Instagram user.

To echo Jean-Luc Godard, what the artist makes visible here is not the representation of reality (as suggested by Instagram) but the reality of representation,[11] in that representation is crafted by such corporations at the level of their design and engineering decisions implemented through their APIs. By using image metadata to satirically 'spy' on their post creators, the artist aims to make visible and expose data capture processes that these platforms employ when we upload content; the artist thus contextualizes our profiles inside a broader ecosystem of related posts—posts that are then used for our personal recommendation algorithms. In opposition to the lightweight, minimal, and seamless aesthetics[12] embodied at the level of UI/UX contributing to a sense of media spectacle,[13] Depoorter detours the metadata in order to expose through the API how invisibly captured chronological and spatial data is used by platforms for their control and surveillance strategies. While interaction on these platforms gives us an illusion of a purely digital experience and circuit, 'The Follower' reminds us of the constant collection of our physical and temporal data for powering recommendation algorithms and sorting information from noise.[14] From this standpoint, this design fiction[15] project also acts as a catalyst for debates centred around internet platform surveillance and control. By doing so, it serves as a foundational first ground helping us to collectively reflect on and envision new social media models and alternatives centred around digital commoning.

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11 Linda van Deursen, Mark Owens, and Jon Sueda, ***Statement and Counter-Statement: Notes on Experimental Jetset***, Roma Publications, 2015.

12 Ratto, 'Ethics of Seamless Infrastructures'.

13 Guy Debord, ***Society of the Spectacle***, Black & Red, 1970.

14 Hito Steyerl, 'Proxy Politics: Signal and Noise', ***e-flux***, 60, December 2014, www.e-flux.com/journal/60/61045/proxy-politics-signal-and-noise.

15 Julian Bleecker, 'Design Fiction: A Short Essay on Design, Science, Fact and Fiction', Near Future Laboratory, March 2009, www.systemsorienteddesign.net/wp-content/uploads/2011/01/DesignFiction_WebEdition.pdf.

Across services provided by Amazon, Apple, Adobe, Google, Facebook, Twitter, and Microsoft, one recurring UX quality stands out that plays into the narrative of obfuscation: 'seamlessness'. To paraphrase Matt Ratto, seamlessness describes user experiences in which the erasure of the marks and boundaries between separate systems creates an infrastructure whose individual parts blend transparently, i.e., without seams.[16] At the level of design and development, seamlessness is materialized through the implementation of infinite scrolls and loading icons. Such strategies cohere to foreground a particular illusion: that such platforms are ephemeral and that data transmission has no material cost nor ecological implications. In reality, these processes necessitate substantial physical infrastructure by way of privately owned data centres and consume significant fossil fuels.

The dependence of these platforms on user data becomes evident when one examines API data streaming features.[17] While our UI/UX experience on these platforms is limited to what our personal recommender algorithms display, these API streams expose in real time the entire raw data processed by servers and sent back to top level apps. Accessing this streaming feature makes explicit the massive quantity of uploads, requests, and processes centralized within energy-hungry platform servers. Inside the Twitter ecosystem, for example, visualizing the real-time stream of raw data from where the entire platform's most recently updated tweets transit to the interface (before being sliced and divided across users) directly contradicts our user experience of a (relatively) minimal personal feed. While personalized feeds and recommendations hide our perception of how much data is being processed, visualizing such streams in relation to real time recontextualizes these processes as centralized and highly material.

16 Ratto, 'Ethics of Seamless Infrastructures'.

17 The Twitter streaming feature can be accessed here: developer.twitter.com/en/docs/tutorials/stream-tweets-in-real-time.

This desire to stretch and make explicit our platform's data transmission processes and materiality underlines Cyrus Khalatbari's piece '2XTWEETSXMODEMSXTEXTXTWEET' (2018)—abbreviated *2X*.[18] Exploring and reusing early internet era dialup modem technology, the piece represents a data transmission assemblage of two silent Twitter streams. Both streams are transmitted at the same modulation level, resulting in an entanglement of data from both streams, materialized into loud analog modem signals that are then transmitted across the exhibition space. With the help of a third modem, this entanglement is then demodulated: it is converted back to digital format and uploaded to the seamless platform on the project's account.

Destabilizing and detouring Twitter's quest for seamlessness as materialized in the optimization of time sliced into 'jittery, schizoid intervals',[19] 2X detours the APIs' stream feature in order to stretch and make tangible our data processes and seams. Specifically, subverting Twitter's streaming feature to extract real-time quantities of raw data that are then fed into the analog and error-prone dial-up modem technology of our early Internet stage, the project contrasts seamlessness (by displaying the last published Tweet from the assemblage) with centralization and materiality (by way of screeching modem signals). To revisit Greenfield, 2X troubles Twitter's tidy proposition of sliced 'micro-temporalities',[20] a technical solution deployed to optimize and automate load times and better maintain an illusion of seamlessness during browsing. Through its reliance on dial-up modem technology, 2X detours the Twitter API to stretch the same temporalities that are usually imperceptible to us, hijacking our silent and hidden social media processes into an assemblage of noise and signals. These noises echo with the heavily material and tangible activity of servers, modems, undersea cables, and other components required for our data processes. While Twitter's intended UX proposes a platform that is purely

18 The project can be accessed here: www.cyruskhalatbari.com/2x.

19 Adam Greenfield, ***Radical Technologies: The Design of Everyday Life***, Verso Books, 2017.

20 Winnie Soon, 'Executing Micro-temporalities', ***DATA browser***, 06, 2018, 99–115.

digital, 2X satirically and humorously counter-proposes a local and decidedly physical infrastructure where old technology collides with new, and where our data transmission processes are intertwined between physical, analog, and digital states. By stretching and making tangible the silent and centralized activity of streams, this project conveys foundational questions about the material and ecological implications of platforms. These questions, taking the counterpoint of the internet's major corporation discourses around digital progress, are crucial assets helping us to map and propose new digital commoning platforms and models.

Designing for Critical Reflection and Seamfulness for the Emergence of New Social Media Platforms and Commons

In opposition to anti-commoning design and engineering decisions that obstruct transparency and obfuscate the material consequences of social media infrastructure, we argue for the use of APIs as tools to raise awareness and enhance critical reflection through design. Subverting these APIs enables us to fold 'critical reflection into the practice of technology design'[21] in ways that support commoning practices. Such folding resonates with designing for seamfulness, as developed by Ratto.[22] To counter seamlessness, Ratto proposes 'infrastructural inversion'[23] techniques: ones that are designed to expose platform infrastructural mechanisms and 'seams'.[24] We thus argue for interacting with social media APIs in a 'seamful' way: intentionally engaging with APIs as 'seams' to serve our needs for collective critical reflection and change. Our desire for alternative social media models is evidenced in the emergence of new platforms such as 'mastodon.social'.[25] mastodon.social defines itself in opposition to many of the

21 Phoebe Sengers, Kirsten Boehner, Shay David, et al. 'Reflective Design', ***CC '05: Proceedings of the 4th decennial conference on Critical Computing: Between Sense and Sensibility***, August 2005, 49–58, www.doi.org/10.1145/1094562.1094569.

22 Ratto, 'Ethics of Seamless Infrastructures'.

23 Geoffrey C. Bowker, ***Science on the Run: Information Management and Industrial Geophysics at Schlumberger, 1920-1940***, The MIT Press, 1994.

24 Ratto, 'Ethics of Seamless Infrastructures'.

25 The mastodon social media platform can be accessed here: www.mastodon.social.

qualities we associate with standard social media platforms and their APIs: it is open-source, community-driven and operated, self-hosted, and decentralized. Users are able to access, analyze, and negotiate how all of its design and engineering seams come together to operate and handle our data behind the interface. mastodon.social also employs a markedly unusual model for sorting and displaying the data contents of feeds. Whereas other social media platforms structure user data capture in ways that facilitate surveillance capitalism through monetization and machine learning, mastodon.social places its collective user base at the core of its sorting process. By doing so, it invites them to curate the collective feed that is seen by all by upvoting or downvoting content. In addition, the collective user base can propose new filtering options via the platform's public channels, which are implemented if accepted after discussion. Finally, a core characteristic of mastodon.social's alternative model is the possibility for self-hosting and decentralization. Unlike other social media platforms, this feature allows users to fork and host new instances and APIs of the platform (including its database) on local servers and computers, giving the mastodon community full control of their data and uploaded content.

Conclusion

Against a landscape of powerful social media corporations acting in ways that privilege financial profit and control over notions of digital commons, we have presented how through design the metadata and streaming functions of APIs can detour, subvert, and critically question the opacity, surveillance, seamlessness, and centralization practices social media platforms employ. Crucially, we argue for leveraging APIs against their prescribed, imagined cases of use in order to enhance collective reflection and action towards the design of web commoning practices. We posit moreover that here, designers and artists working with technology play a crucial role in building alternative scenarios to support these reflections; opening through design new paths enabling us to further ground our need for digital commons. Our first claim gravitates around the use of social media metadata, which is

readily available to developers via APIs. Here, we point out that re-appropriating geotemporal components of metadata can make visible the capitalist and anti-commoning seams enabling platform surveillance strategies that are quietly operating under the hood of minimalist UIs. Diving deeper into social media platform infrastructures, our second claim proposes hijacking API streaming functions. While such platforms deploy seamlessness in ways that redirect attention away from material and ecological costs, using streams as inputs inside our reflective design projects can make tangible the centralized and highly material nature of such platforms. In dialogue with the emergence of new social media models like mastodon.social, we finally draw attention to the importance of seamfulness, decentralization, and community-driven approaches within digital design. While we may seem trapped within flawed systems, we have shown how those very systems may be turned against themselves to enhance collective critical reflection and explore alternatives to our current WWW and internet megastructure.

Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy

Yuhe Ge

Yuhe Ge (b. 2001) holds a degree in Architecture from the University of Edinburgh, School of Architecture and Landscape Architecture (ESALA). Ge's graduation project was part of the academic unit of 'Getting (un)Stuck: (De)Signs and Stories Beyond Petroleum'. Her research focuses on neglected natural commonwealth and colonization through the application of fictional research methods. Ge currently lives and works in Hangzhou.

The financial hegemony of the U.S. implies social costs for the rest of the world. Despite its general relative decline in power, the U.S. continues—especially since the beginning of the global pandemic—to exert financial hegemony.[1] In this respect, petroleum plays a vital role in capital colonization[2] due to its function as an essential means of production for today's societies. In this chapter, I understand a 'commonwealth' as a kind of property shared together by humanity as a whole, as well as air, water, gesture, and language (i.e., wealth maintained, produced, and distributed by the commons).[3] I argue that a commonwealth based on natural production-side data has the potential to be a hard anchor to currency when the national monetary policy chooses to leave U.S. financial colonization by delinking from the petrodollar.[4] A hard anchor is essential for the stability of a national currency and for transitional, substantial economic transactions.[5] Following this theme, I provide a hypothetical example of

1 Carla Norröf, 'Is COVID-19 the end of US Hegemony? Public Bads, Leadership Failures and Monetary Hegemony', ***International Affairs***, 96:5, 2020, 1281–1303.

2 The policy and practice of a strong power extending its control territorially over a weaker nation or people. Garrett Wallace Brown, Iain McLean, and Alistair McMillan (eds.), ***The Concise Oxford Dictionary of Politics and International Relations***, Oxford University Press, 2018, 14. In this context, 'colonization' emphasizes the fact that when a government uses the U. S. sovereign currency as a reserve, huge structural exogenous risks come to that country with the monetary policy fluctuation in the distant U. S. Dongsheng Di shows a chain to explain the causes of the exogenous risk: Federal Reserve raising interest rates leads to devaluation of the country's local currency, capital outflows, and higher imported inflation. When the U. S. interest rate raises to burst a bubble in one of the global markets caused by previous excessive quantitative easing, the fluidity of global markets would be frozen. Thus, a country's local business operators could go bankrupt as a collective and the country's government may fall into a debt crisis due to the operation of the Federal Reserve System, although the U.S. may be distant from this country. Dongsheng Di, ***The Power of Money: Relations among Politics, the Market and the People***, China Social Sciences Press, 2019, 153. The scenario described by Di could undoubtedly be seen as an expansion of control by a strong country over a weak one, while the main object under control would not be the national territory but its capital markets: a distant global capital leadership plays a major role in local common economies.

3 Michael Hardt and Antonio Negri, ***Commonwealth***, Harvard University Press, 2009, vii–xiii.

4 David E. Spiro, ***The Hidden Hand of American Hegemony: Petrodollar Recycling and International Markets***, Cornell University Press, 2019, 1–6.

the transformation of Mossmorran[6]—a chemical plant established in Fife, Scotland during the 1980s to process oil and gas from the North Sea—into a Post-Petroleum Centre for Ecology and Economy in the 2030s. This chapter first outlines the early onset of global capital activities and how this commercial interest expansion crossed borders, coming to dominate Wall Street and gaining control of the world through petroleum. I describe the transformation of financial capital bias from the physical industry era to the information era and use this history to discuss the data commonwealth that we review here. The second part of the chapter provides a vision of how the commoner 'gleans'[7] ecological production-side data and how national currencies can be shaped by this information to counter the risk brought by the potential crash of the U.S. global financial colonization based on the petroleum-dollar system. This section offers a working proposal for the Post-Petroleum Mossmorran Centre to explain these gleaning and regulating details.

5 Instead of being an element in a fair, efficient, and unified global market, floating exchange rates are, in fact, a barrier and disincentive. An unanchored currency is an obstacle to a unified, free global market. To establish this, it would take large fluctuations in exchange rate obstacles to cross-border transactions of the physical economy. Then, its pro-cyclical characteristics could have huge impacts in developing countries, making these countries over-reserve foreign exchange, leading to imbalances of the global economy and further accumulation of systematic risks. Di, ***The Power of Money***, 154–159.

6 'Historic Timeline', Mossmorran, accessed 20 November 2022, www.mossmorran.org.uk/mossmorran/historic-timeline/.

7 Agnès Varda, 'The Gleaners and I', video filmed 2000 in France, 1:18:33, www.youtube.com/watch?v=aKgjjEJvMbM&t=2s.

Pre-capital activities sprang up in the Netherlands[9] and spread to Manhattan at the beginning of the seventeenth century.[10] Eventually, through developments catalyzed by World War II around 1940,[11] the Bretton Woods system in 1944[12] and the petrodollar accord with Saudi Arabia since 1974, the U.S. dollar came to be based on oil.[13] Accepting the dominance of petro-culture[14] brings us ever closer to another financial crisis. The famous crisis, the first financial bubble of Tulip Mania, appeared with some of the most pioneered commercial practices and speculation[15] in 1636 and 1637 in the Netherlands.[16] As shown in Figure 1, these speculative, adventurous intentions spurred the pre-capitalist economic market to become prosperous in the Netherlands and abroad during the seventeenth century.[17] At that time, the Dutch invented the stock, the banking system,[18] and (brought on by the need for maritime exploration) the first joint-stock company—the Dutch East India Company, which was built in 1602[19] and whose ships arrived in North America and occupied

8 Sepideh Karami and Rosie Milne, 'Getting (un)Stuck: (De)Signs and Stories Beyond Petroleum', Lecture academic unit Bachelor's and Master's degree at Edinburgh School of Architecture and Landscape Architecture (ESALA), 2022.

9 Though the Dutch Republic pioneered some of the most sophisticated commercial practices, its development pattern pointed to a pre-capitalist economy instead of the modern capitalist economy. Ellen Meiksins Wood, ***The Origin of Capitalism: a Longer View***, Verso, 2002, 87–89.

10 ***Britannica, City & Towns M-O***, s.v. 'Manhattan', accessed 23 November 2018, www.britannica.com/place/Manhattan-New-York-City.

11 Radhika Desai, ***Geopolitical Economy: After US Hegemony, Globalization and Empire***, Pluto Press, 2013, 85–87.

12 ***Britannica, Money***, s.v. 'The Bretton Woods system', accessed 15 May 2022, www.britannica.com/topic/money/The-decline-of-gold#ref1089594.

13 Thomas Palley, 'Theorizing Dollar Hegemony, Part 1: the Political Economic Foundations of Exorbitant Privilege', ***Federal Reserve Bank of St Louis***, 2022, 37–38.

14 Petroleum composes space and shapes culture. It modulates our lives. With the rise of modern industry, oil is not simply a source of energy: mere fuel, brute input. It is inextricably social. University of Alberta, Department of English and Film Studies, ***After oil***, Petrocultures Research Group, 2016, 15–18.

15 Wood, ***The Origin of Capitalism***.

16 Peter M. Garber, 'Famous First Bubbles', ***The Journal of economic perspectives***, 4:2, Spring 1990, 37–39.

17 Wood, ***The Origin of Capitalism***.

18 Ibid.

19 Leslie A. White, ***Modern Capitalist Culture***, Routledge, 2016, 68–69.

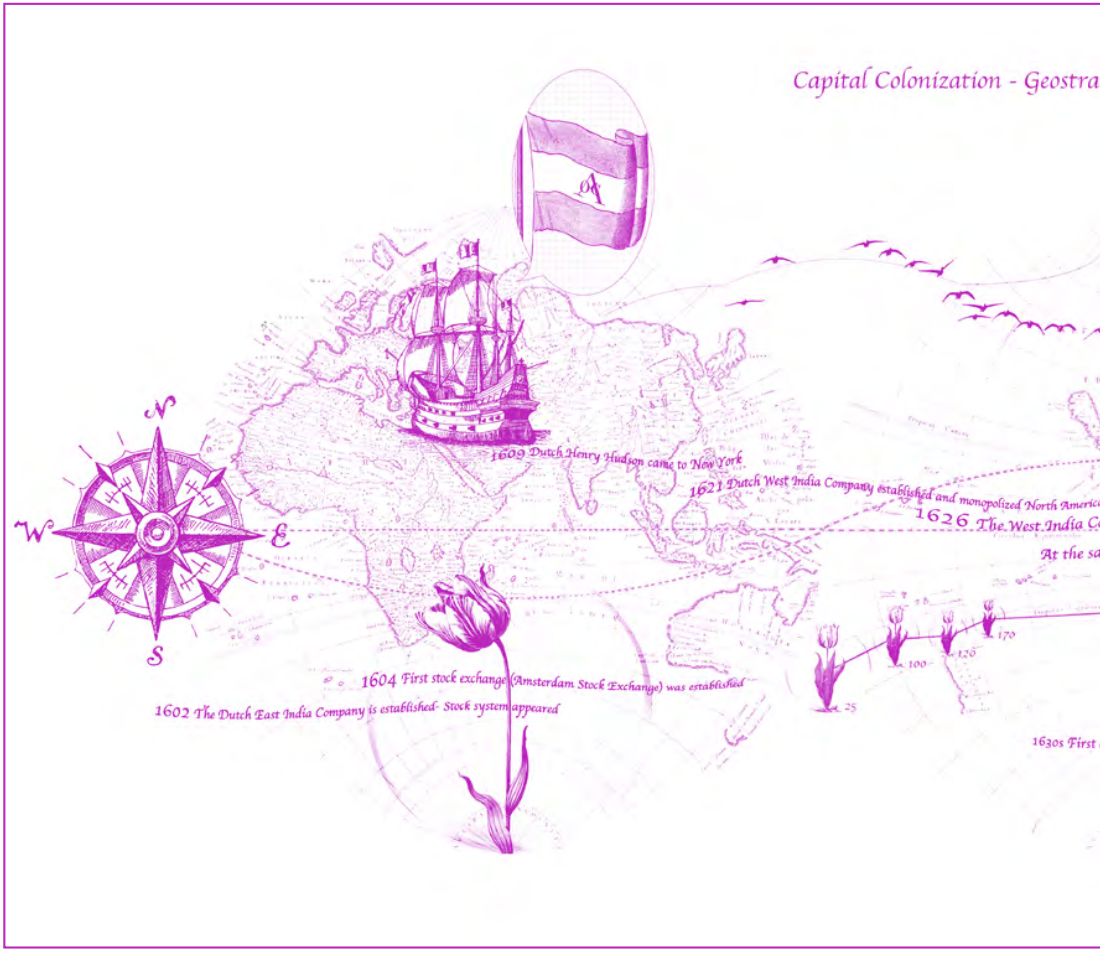
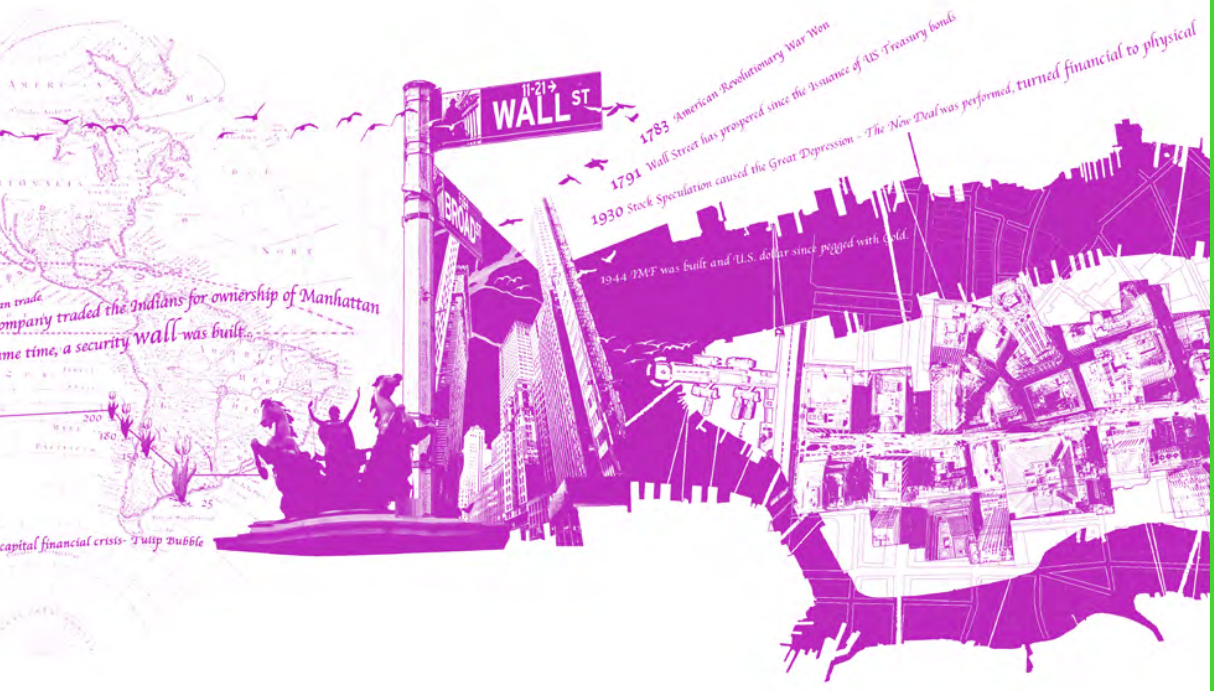


Fig. 1: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy. Timeline*, 2022, illustration, 24×118.8 cm.

tegy


WALL ST
BROADWAY
1783 American Revolutionary War Won
1791 Wall Street has prospered since the Issuance of US Treasury bonds
1930 Stock Speculation caused the Great Depression - The New Deal was performed, turned financial to physical
1944 IMF was built and U.S. dollar since pegged with Gold.
n trade
ompany traded the Indians for ownership of Manhattan
me time, a security wall was built
capital financial crisis- Tulip Bubble

Capital Colonization - Currency Strategy · Globalization

Anti Capital Colonization - From Geostratey to Currency Strategy · Localization

· · · 2030 New financial crisis comes——An **Eco-wall Street** builds up in **Mossmorran**
and since, the currencies start to peg with local ecology
—— Production Data+ Land resource

land in the south of Manhattan in 1613.[20] To protect themselves against the attacks from Native Americans, the Dutch settlers built a fortification, which is now the site of Wall Street.[21] After the end of American Revolutionary War in 1783, the U.S. became a sovereign nation (independent of Great Britain) and inherited the financial heritage that the British left behind.[22] This included the establishment of international banks, central banks, as well as the issuance of Treasury bonds,[23] where the flourishing of the Wall Street began.[24] As asserted by Radhika Desai, after more than a century of economic and military ascendancy, the establishment of the Bretton Woods system brought Wall Street and its dominant U.S. dollar market to a new stage.[25] With the establishment of the Bretton Woods system in 1944, the U.S. dollar began to be used as the reserve currency of the International Monetary Fund (IMF) and became the world's only currency directly pegged to gold.[26] Relying on gold, the U.S. Treasury bond market grew in prosperity following large purchases of U.S. Treasuries by other countries as regulating reserves for national currency stability. Wall Street became the world's financial centre and the U.S. dollar gradually became the world's principal currency. Following the first oil crisis in 1973, Richard Nixon, the thirty-seventh U.S. president, unpegged the dollar from gold and linked it to petroleum. The petrodollar caused the U.S. financial hegemony to deepen even further than in the Bretton Woods period.[27] As a result of industrialization and petroleum's usefulness in promoting modern production and human survival,[28] petroleum thus became the most common tool of colonization. Today, the world faces another global financial crisis following the

20 Thelma Wills Foots, ***Black and White Manhattan: The History of Racial Formation in Colonial New York City***, Oxford University Press on Demand, 2004, 24–26.
21 Ibid, 38–39.
22 John Fiske, ***The American Revolution***, vol. 2, Educational Press, 1919, 2–4.
23 ***Britannica, Law, Crime & Punishment***, s.v. 'Bank of the United states', accessed 8 November 2019, www.britannica.com/topic/Bank-of-the-United-States.
24 ***Britannica, Highways and Trails***, s.v. 'Wall Street', accessed 16 September 2022, www.britannica.com/topic/Wall-Street-New-York-City.
25 Desai, ***Geopolitical Economy***, 87–91.
26 Wood, ***The Origin of Capitalism***.
27 Palley, ***Theorizing Dollar Hegemony***, 41–48.
28 University of Alberta, Department of English and Film Studies, ***After Oil***.

COVID-19 pandemic.[29] This chapter proposes that the best way to break the economic bubble is to back activities related to human survival, such as farming, by gleaning the commonwealth.

As aforementioned, the commonwealth refers to wealth maintained, produced, and distributed by the commons and this includes ecological data that are typically overlooked, such as temperature, humidity, and sunlight. These factors are eco-systemic and directly influence natural production, such as forest volume or fish yield. The chapter calls these digital eco-resources 'production-side data': wealth maintained and shared by the commons (i.e., commonwealth). Most customer data in the industrial and information ages, being commonwealth, has been privatized by companies such as Google, Uber, and Amazon, while production-side data has not been constrained to this cyber-enclosure, as it is dispersed throughout nature and its gathering is costly for private corporations using industrial means. However, this data can be gleaned by commoners. I use 'gleaning' to describe the gathering process in this context because it is more precise than 'collecting'. As Joachim du Bellay writes in *The Gleaners and I*—'we would see the gleaner, tramping along gathering the relics of that which is falling behind the reaper'.[30] What is being gathered in this gleaning process are items that we used to be blind to, not those we generally pay attention to. Furthermore, gleaning by commoners is a process of digitizing and valorizing physical ecological resources that has the ability to regulate the macroeconomy. That is to say, during the process of gleaning, ecological resources in physical form are abstracted into a virtual value expression of 'use-value', which is presented in the form of data. In *From Agriculture 1.0 to Agriculture 4.0*, Tiejun Wen elaborates that the macroeconomic benefits would be generated during the process of Eco-valorization, as the multidimensional value of ecological resources would eventually be transformed into economic

29 International Monetary Fund, 'Government Intervention and Bank Market Power: Lessons from the Global Financial Crisis for the COVID-19 Crisis', ***IMF Working Papers*** 275, December 2020, 7–9, www.elibrary.imf.org/view/journals/001/2020/275/001.2020.issue-275-en.xml.

30 Varda, 'The Gleaners', 23:43.

value.[31] Gleaning, supervising, and managing this natural knowledge and then linking a country's currency to its ecological production data is a way to win back the commonwealth before capitalism promotes enclosure movements on natural resources of countries. After gleaning the commons in nature, it is possible to consider the possibility of delinking currency (a symbol of national sovereignty[32] and a foundation for stable cross-border trade)[33] from the colonial tool of petroleum and of pegging it to production-side data and land resources that directly impact the survival and future development of countries' communal resources.

During the Industrial Revolution, industrialized countries experienced a rise in productivity and a crisis of overproduction; such crises were remedied through war.[34] During war, the productive capacities of many countries were destroyed, allowing over-producing countries to overtake empty and emerging markets, such as in the case of the Opium War.[35] In the scheme proposed in this chapter, the means of production and their associated production processes are monitored and controlled to reduce the harm caused by overproduction. Based on this framework, a vision for the Post-Petroleum Centre can be used to explain gleaning details and program feasibility in greater depth.

31 Four modes were proposed to induce the flow of valorized eco-resources and generate revenues: the production value-added mode that converts the use-value of ecological resources into exchange value directly, the symbiotic value-added mode that develops regional ecological and environmental management and enhances the economic and social value of the upgrading area, a mode of turning the ecological trading market by establishing a sturdy trading system, and a mode that creates flowing mutual compensation based on eco-compensation from government policy and environmental services from the market. Tiejun Wen, Zhenghua Tang, and Yahui Liu, et al., ***From Agriculture 1.0 to Agriculture 4.0: Ecological Transformation and Agricultural Sustainability***, The Oriental Press, 2022, 199–202.

32 Di, ***The Power of Money***, 93–94 and 147–154.

33 Ibid., 154–159.

34 Wen et al., ***From Agriculture 1.0***, 80–83.

35 Cynthia Clark Northrup, Jerry H. Bentley, Alfred E. Eckes Jr, Patrick Manning, Kenneth Pomeranz, and Steven Topi, ***Encyclopaedia of World Trade: from Ancient Times to the Present***, Routledge, 2015, 1084–1085.

In January 1971, the Brent oil and gas field was discovered in the North Sea, resulting in the flourishing of a large chemical industry in the surrounding areas.[36] Now, half a century later, the Brent field is experiencing a long-term decline.[37] The following design project discusses the petro-culture surrounding Mossmorran, a chemical plant established by Shell and Esso in the Fife area of Scotland in the 1980s to process oil and gas from the North Sea.[38] The project applies a method of imaging a fictional future scene for this former oil and gas chemical plant, its surroundings, and the commonwealth affected by it in a post-petroleum era. As Michael Batty discusses, we now stand at a threshold in regards to what we can and cannot predict.[39] Meanwhile, oil is the blood of the industry. It sustains our daily life and makes us intersect with the distant past and future by virtue of its chemical properties. Petro-time is a concept developed by Heather Davis: we can take petroleum as a medium to examine our current situation in both time and space.[40] By performing architectural methods of imaging the unknown with this medium, we are able to understand our situation through various perspectives, which are proposed to frame the real. When the detailed context is gradually constructed, materiality, temporality, and characters can be precisely positioned and designed. Then, a proposal for responding to the contemporary may arise.[41]

Mossmorran is one of the biggest CO2 polluters with sustainable growth in the UK, and the plant has significantly

36 Spiro, ***The Hidden Hand***.

37 International Energy Agency, 'United Kingdom', Countries, accessed 16 December 2021, www.iea.org/countries/united-kingdom.

38 Spiro, ***The Hidden Hand***.

39 Jorge Gil, 'Review of ***Inventing future cities***, by Michael Batty', ***Urban Morphology***, 23:2, 2019, 181.

40 In the petro-time described by Heather Davis, petrol was delivered to us from long-dead plants and animals and was transformed again when humans got in touch with it. The petrol experiences another latency during the process of production and use, then has an impact on the world and human beings in the close or distant future. Heather Davis, ***Plastic Matter***, Duke University Press, 2022, 75–76.

41 Karami and Milne, 'Getting (un)Stuck'.

impacted the environment and surrounding community since its opening.[42] However, it is highly profitable for the government and ExxonMobil.[43] Based on field research conducted in February 2022, residents of its surrounding towns (particularly Cowdenbeath and Lochgelly) that do not depend on Mossmorran for their industry,[44] stated that the air pollution, noise, and vibration caused by burning ethane at the plant had a significant impact on their lives.[45]

In the 2030s, the Mossmorran chemical plant ceases to operate, and the site is transformed into the Mossmorran Monetary Fund (MMF), an ecological and economic institution whose working system can be seen in Figure 2. In this imagined scenario, every producing site links to the MMF, which regulates the balance between the local economic

42 'How Nicola Sturgeon can Capitalise on COP26 for Scotland and the World's Sake', Blog, Massmorran, posted 11 October 2021, www.mossmorran.org.uk/2021/10/how-nicola-sturgeon-can-capitalise-on-cop26-for-scotland-and-the-worlds-sake-auto-republish/.

43 'Shell Workers at Fife and Aberdeenshire plants Threaten to Strike Amid Gas Giant's "Record Profits"', Blog, Mossmorran, posted 10 October 2022, www.mossmorran.org.uk/2022/10/shell-workers-at-fife-and-aberdeenshire-plants-threaten-to-strike-amid-gas-giants-record-profits-auto-republish/.

44 Cowdenbeath and Lochgelly are relatively obvious aging towns. Most residents are retired workers from the manual craft factories of the surrounding region. Although some of the town's residents now work in Mossmorran, the town's economy is not dependent on the production and operation of this chemical plant. Prior to the Industrial Revolution, the town's economy depended on traditional handicrafts, but from the late nineteenth century until the middle of the last century, the coal mining industry in Cowdenbeath and Lochgelly flourished to the extent that rail lines were opened up around the town for the transport of coal. And then a left-wing miners' movement emerged. After the decline of the coal industry in the second half of the last century (all the coal mines were closed), the town did not introduce new industries but became a place for retirees as the workers aged, while young people preferred to leave the town to find employment elsewhere. Yuhe Ge, Naiyue Zhang, Olga Vlachokyriakou et al., 'Mossmorran Surveys and Interviews: Towns of Cowdenbeath and Lochgelly', University of Edinburgh, 2022.

45 The surrounding residents find it difficult to sleep properly due to the high levels of light and noise pollution, with as many as 303 of the 450 people surveyed suffering from sleep disturbance. In addition to the audio-visual influences on their living habits, residents also endure subtle damage from the pollution of irritant gas from the chemical plant. Nearly a third of respondents suffer from eyes, throat, and skin irritation and nearly half from headaches and migraines. 'Impacts Map', Mossmorran, accessed 20 November 2022, www.mossmorran.org.uk/social-impacts/.

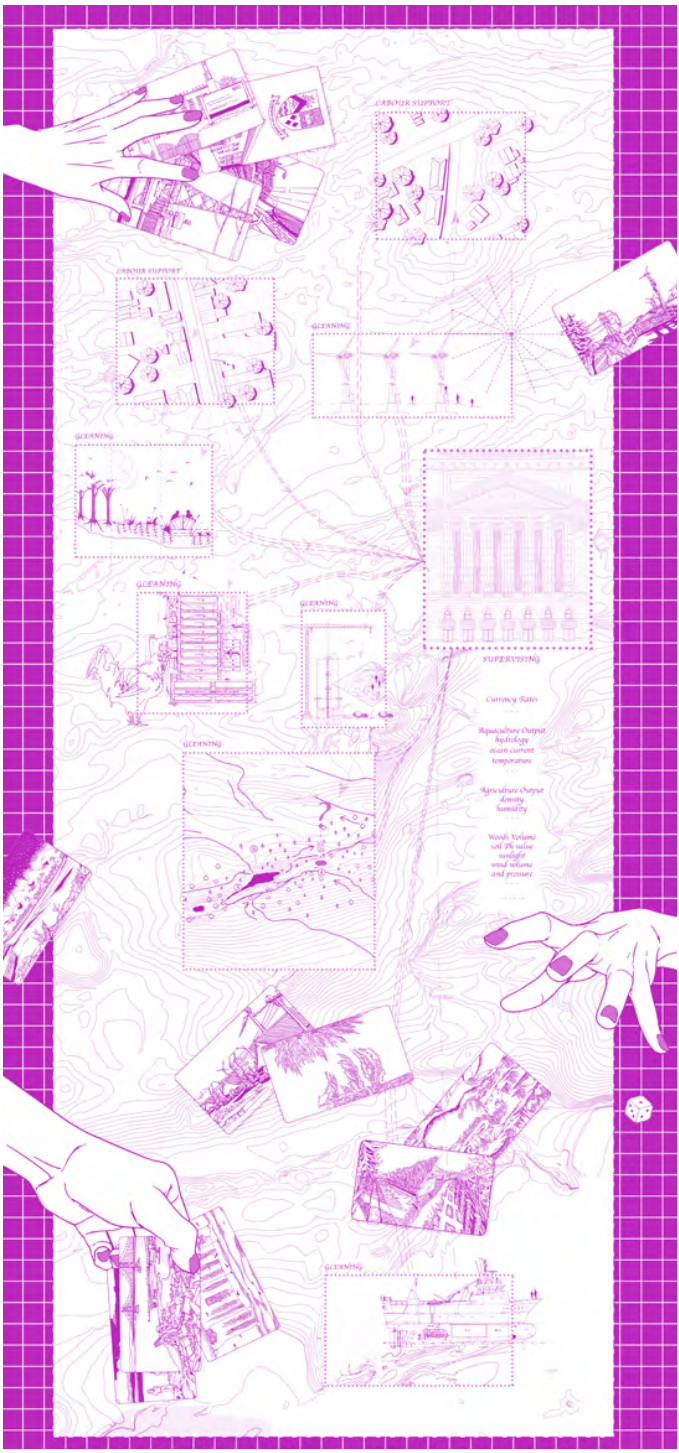


Fig. 2: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy. The working system of the Mossmorran Centre for Ecology and Economy*, 2022, illustration, 84 × 39.8 cm.

and ecological production-side data backing physical crop resources and production policies (adjusting policies accordingly); the MMF also establishes an eco-resources trading market.

To clearly describe the gleaning process, this example will start with a site of production, the Cullaloe Reserve Forest, as shown in Figures 3 and 4. In Figure 3, showing the geological relationship between Cullaloe Forest and the Mossmorran Centre, the different land resources, and a three kilometre walking path through them, can be seen. Figure 4 presents gleaning scenes along the walking path. Walking on it, people can gather fragments of nature in various ways and store them in savings ATMs scattered throughout the Cullaloe Forest, as depicted in Figures 5–7. Figure 5 demonstrates ways to glean different types of soil, plants, and data in the forest using different methods and tools, while Figures 6–7 show the detailed samples gleaned in activities 4 and 6 with red marks in Figure 5. Data can be transferred to research labs and a supervising centre through machines that receive physical gleaning samples. Government ecological researchers from nearby labs regularly pick up these samples from across the forest. Every time a deposit or transfer is completed, the gleaner's account is automatically credited with a printed receipt (Fig. 8) as a voucher of knowledge exchange. As mentioned previously, some labs are built along the walking path. In addition to research spaces, these labs have spaces for public activities. Figure 9, for example, shows a scene from a gleaners' public hall in a lab, which allows the reception of large samples that the ATMs cannot store, communications from visiting researchers, and seasonal research exhibitions.

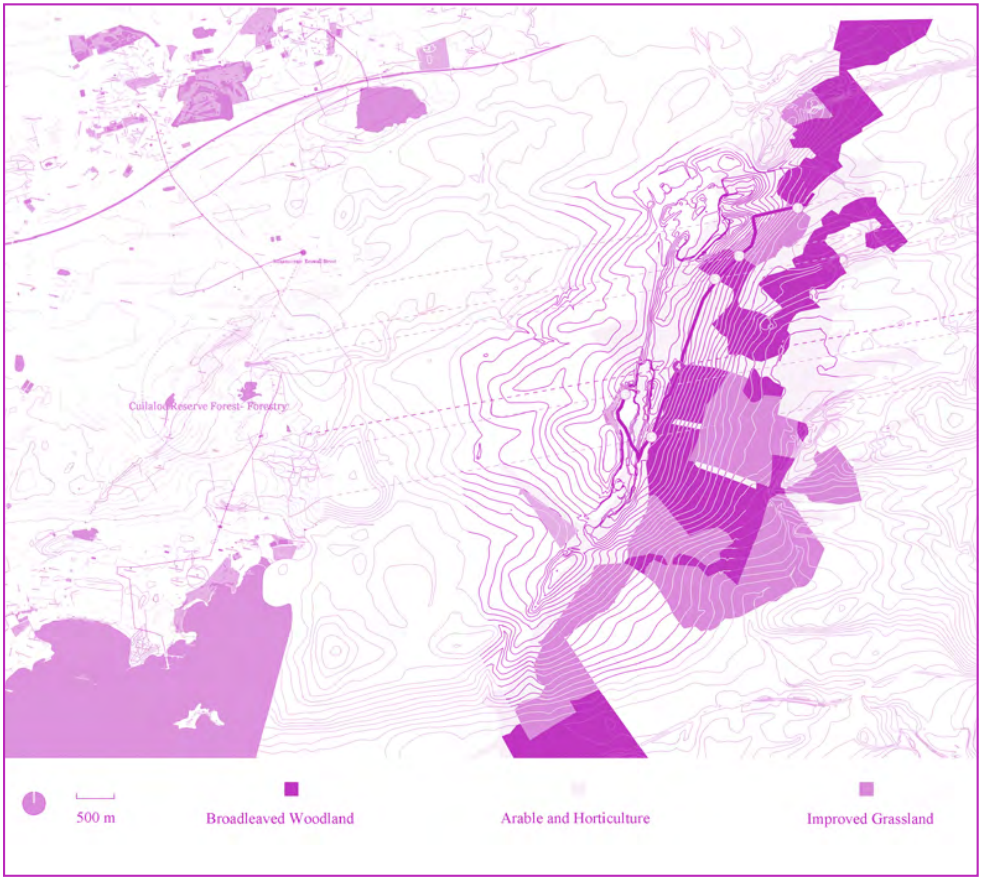
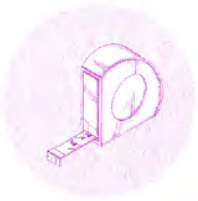


Fig. 3: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy. Site plan of Cullaloe Reserve Forest with a walking path and the relationship of its scale*, 2022, illustration, 22.8 × 26.5 cm.

Fig. 4: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy. Scenes of gleaning along the Cullaloe Reserve Forest Walking path*, 2022, illustration, 84 × 59.4 cm.

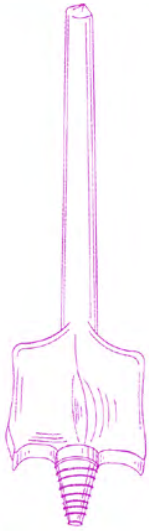
Ph Meter
for Position 1



Measuring
Tape for Position 2

0.25 m Hand
Trowel for Position 5

Gardening Scissors
for Position 5



0.40 m Hand Shovel
for Position 3

Fig. 5: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy: Gleaning Process at 1:50*, 2022, illustration, 31.7 × 25.5 cm.

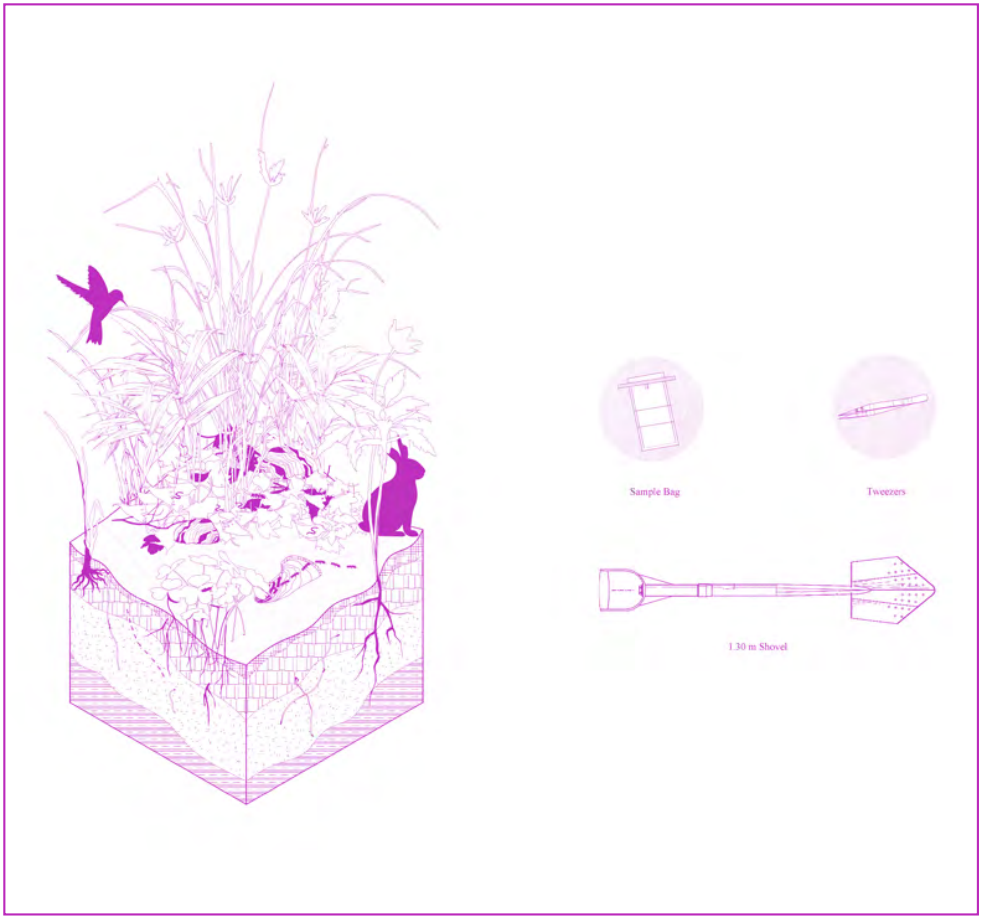


Fig. 6: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy. The detail of gleaned surface soil sample in position 4 (fig. 5) at 1:20*, 2022, illustration, 33.6 × 41.7 cm.

Fig. 7: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy. The detail of gleaned sub soil sample in position 6 (fig. 5) at 1:20*, 2022, illustration, 33.6 × 41.7 cm.

Fig. 8: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy. Receipt records of gleaning in detail*, 2022, illustration, 18.7 × 13.2 cm.

Fig. 9: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy. The gleaners' public hall in the lab space*, 2022, illustration, 59.4 × 84 cm.

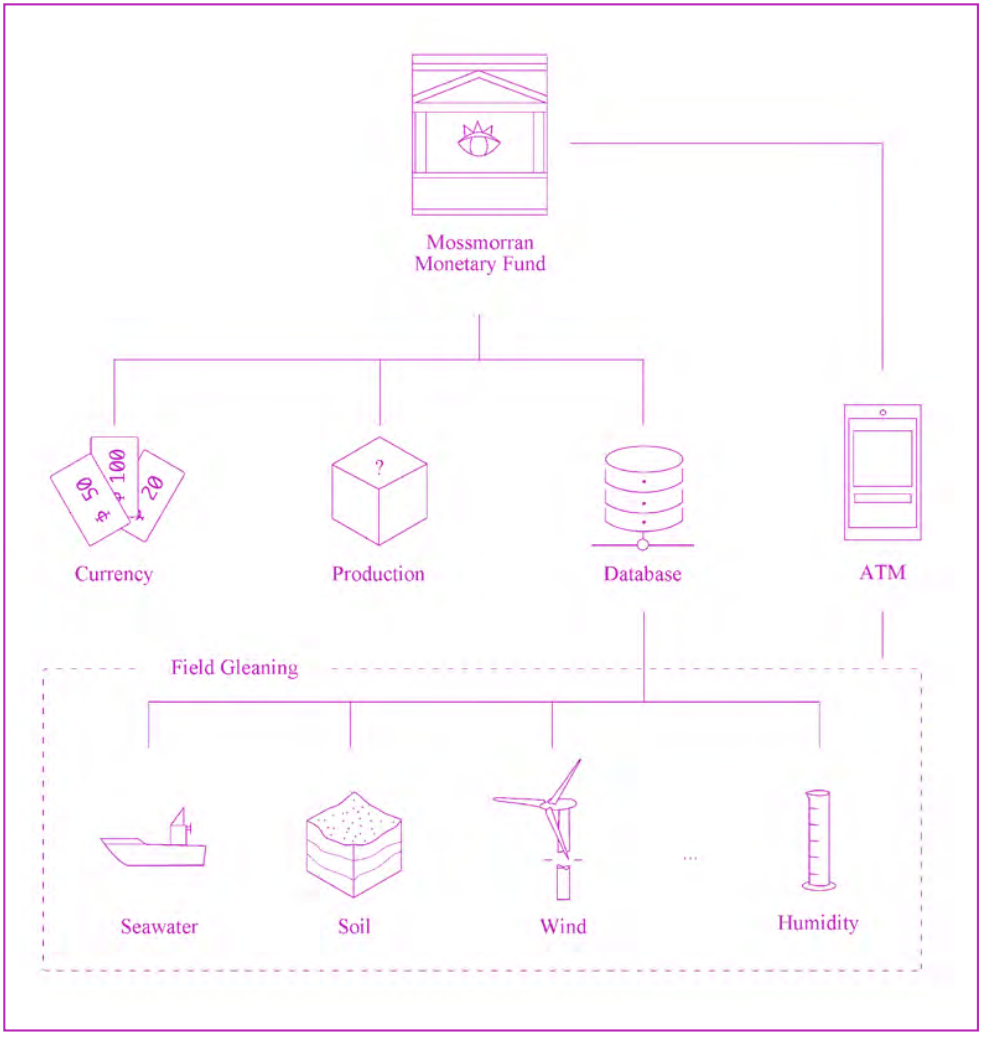


Fig. 10: Yuhe Ge, *Gleaning for the Commons: A Post-Petroleum Mossmorran Centre for Ecology and Economy. Working principle*, 2022, illustration, 21 × 19.4 cm.

This chapter does not propose the elimination of oil and industrialization but rather a general solution that may stabilize currencies and counter possible economic crises linked to inflation resulting from monetary policies no longer being anchored to petroleum and the U. S. dollar system. To this end, the chapter seeks to identify a means of linking currency to natural production-side data that is local and relates to the survival of the local population, as shown in Figure 10. In this scenario, various kinds of digitalized eco-resources appear as production-side data in different parts of nature and are transmitted back to the MMF. The MMF then valorizes and uses this data to regulate production activities (preventing, for example, overproduction) in the natural environment of their national region. Additionally, the trade and flow of valorized eco-resources in the market of the commons conforms with these regulations in the production policy of the government. The process of digitalizing, valorizing, and trading after gleaning the eco-resources generates revenues in the liquid market and then feed back into the national macroeconomy. Depending on this circular economy scenario, the national monetary based on production-side data can be controlled and stabilized by each government within their own territories. In this way, each country's government is obliged to stabilize monetary value by protecting the environment. The practical limitations of this scheme are linked to technology and policy. For instance, in regards to the technical practicing scale in the site example, on a community scale Mossmorran is surrounded by a prosperous agricultural industry and production landing points are diverse. For other sites' practices, production-side data would need to be rigorously tailored to suit local conditions.

With respect to the application of this scheme on a national scale, this proposal takes into account several challenges that can be foreseen, which link to product value in each region and the unknown impacts of government policy and digital technology on eco-resources. The design project is based on a vision for the future using existing digital agricultural production methods and keeping in mind several key assumptions. Firstly, co-operation between governments

and the public is universally ideal in this imagined scenario. In reality, the degree of initiative and advantages of co-operation would vary according to different cultural tendencies. For example, countries under the East Asia model might be more active in the gleaning process of the commons, while countries under the Rhine model might have more advantages in the processes of valorizing and regulating using technology after gleaning.[46] In addition to the general problem of public participation, property rights and eco-resources differ from country to country. Outside countries where the government holds property rights, in countries where land and agricultural property rights are privatized, the physical material resources directly affected by these data cannot be integrated by the government even if the authority has the production-side data. Governmental departments must engage in tough negotiation with private owners or multi-national financial groups[47] before possibly considering ecological production as part of national reserves to stabilize currency values. Based on these limitations, areas for future research can be envisioned. These could include studies on future digital agriculture regulations or investigating whether there is potential to control and regulate the growth of crops through the adaptation of artificial technology to nature. Alternatively, broader-scope work might examine the impact of different policies on property rights in the ecological field or rural issues affecting the feasibility of agriculture-based digital currency regulation.

46 In countries following the East Asia model, such as China and Japan, the small-peasant economy plays the dominant role in environmental resources. According to statistics produced by Hefa Feng in Hebei Province of China in 1978, 86.34% of 2500 families owned land between 0.0033-0.0667 square meters, representing the epitome of land-equalization systems of every revolution in history. Wen et al., ***From Agriculture 1.0***, 106–114. Based on this system, the owner-peasant who held the land and their relatives would be willing to promote digital eco-resources valorization led by the government, as it is directly linked to the commons' profits. In the same chapter, Wen discusses Rhineland Capitalism with high welfare based on high tax. The Rhineland model has the advantage of high citizen participation and the EU's unified management and support in science and technology. However, it has obvious shortages as well. The government is under high financial pressure and the mechanism of high taxes, high national debt, low investment, and low consumption could make national finances easily fall into a vicious cycle. Furthermore, the uneven distribution of benefits among members and the financial subsidies for commodities exported in the EU has led to the blind expansion of production in each country, resulting in a surplus of agricultural products and fierce competition (Ibid, 91–99).

Under this system, it would be easier to implement eco-resources through digital valorization. But the fierce competition among countries for ecological resource products, the welfare that the government needs to support, and the taxes that people need to pay after expanding the scope of environmental resources would also put great pressure on the society.

47 With the dominance of free competition and interest first, the farm owners in the countries covered by the Anglo-Saxon model are mainly immigrant colonists. Large-scale agriculture is constructed on the massive reduction of Indigenous populations. Inside this system, the vast speculative finance of the free market became involved and dominated the agricultural production chain, deconstructing the original agriculture systems in developing countries, such as Brazil and the Philippines, with financial instruments such as farm produce futures. The multi-national financial groups receive income from developing countries' agricultural production in the international market, passing the debt of overproduction to them but not taking accountability for the hunger and poverty that occurs in the countries where multi-national farms are located. Wen, et al., ***From Agriculture 1.0***, 79–90.

Acknowledge-ments

This publication is an outcome of the conference 'Commons in Design' held at FHNW Academy of Art and Design in Basel, Switzerland (15–17 February 2023). The idea for the conference was inspired by the research project 'Commons in Design' funded by the Swiss National Science Foundation (SNSF) and led by Christine Schranz at the Institute of Contemporary Design Practices (ICDP). The research project deals with the concept of design in the context of digitalization and the changes this entails for the role of designers. Technological advances have enabled new paradigms of work organization (such as co-working and new professional communities and identities, including maker culture) and have empowered new frameworks for co-creation, co-design, and the sharing of design knowledge and products. Arguably the most famous example of commons or knowledge commons in design (i.e., intangible knowledge or designs made available over the Internet to build physical objects) is the Tiny House. Current research directions focus on the issues of sustainable products and services, design processes, and forms of collaboration.

At the conference, we explored the relevance of commons and commoning within design as a discipline and field of research. We aimed to shed light on the complexity of commons and commoning from a design perspective and to present future models and scenarios pointing towards a more sustainable, just, and peaceful world. Central to this was the question of how principles of commoning can benefit design processes, methods, and ways of working, ultimately changing the way designers think

or position themselves. As was shown in the individual contributions, the strength of commons in general, and specifically in design, lies in the fact that sharing creates added value. Or, to reference the work of economist and Nobel laureate Elinor Ostrom: it is possible to deal with shared things in such a way that all people can satisfy their needs in the long run.

The three-day conference was held as a hybrid event whereby contributions were made through different formats including paper presentations, poster presentations, and workshops. These contributions were the result of an open call inviting anybody working in the field of design and/or the commons to submit a contribution. The conference was directed at designers and academics as well as practitioners, theorists, critics, teachers, and students interested in commons in design.

We received over ninety very diverse international contributions from more than 170 authors and collectives. In a double-blind peer review process, we selected twenty-seven international speakers from sixteen nations who presented their work during our conference in fifteen paper presentations, seven poster presentations, and two workshops.

The selected contributions were presented and discussed during three days in the following panels:

I. Design, Gender, and Working Environment
Commons and commoning offer a methodological approach to thinking beyond a Eurocentric, majority 'white' design terms. How can commons and

commoning be linked to other inclusive approaches, e.g., feminism, postcolonialism, or other?

2. Design, Body, and Ecology

Not only the design of artifacts, but also bodies and ecology are considered as a field of creative negotiation and opening. How can commons and commoning contribute to such a design practice?

3. Design, Networks, and Digital Fabrication

As a result of socio-technical change and Industry 4.0, new requirements and tasks for the design discipline and designers are emerging; furthermore, a culture is spreading in which digital design, manufacturing, production, and the work of people, machines, and things are in the foreground. What is the impact of knowledge-based commons and commons-based peer production on designers' activity, design process, production, and distribution?

Each panel was introduced with a keynote speech given by the keynote speakers: Nan O'Sullivan, Holly McQuillan, and Zoe Romano.
www.commons-in-design.ch

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As the conference chair and editor of this book, I would like to express my sincere gratitude to the following people:

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Christine Schranz
Zurich, June 2023

Person's Names

Organizations/Platforms

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The scarcity of resources, climate change, and the digitalization of everyday life are fuelling the economy of swapping, sharing, and lending—all of which are in some way linked to a culture of commoning. In this context, we understand commons as community-based processes that use, collectively manage, and organize generally accessible resources—referring to both goods and knowledge.

Commons in Design explores the meaning and impact of commons—especially knowledge-based peer commons—and acts of commoning in design. It discusses networked, participatory, and open procedures based on the commons and commoning, testing models that negotiate the use of commons within design processes. In doing so, it critically engages with questions regarding designers' positionings, everyday practices, self-understandings, ways of working, and approaches to education.

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