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Chapter 1
An Introduction to Design Commons

Gerhard Bruyns and Stavros Kousoulas

Abstract The reasons for a dedicated edition on "design and commoning" are two-fold. First, the recent surge of renewed interest in the social conditions of design remains atheoretical. A deeper theoretical and philosophical foundation will help problematize the link between commoning and design, and in doing so define the operative theories, concepts and frameworks that influence design thinking across a series of design contexts and conditions. And secondly, design has become more ubiquitous, expanding both its domain of influence and conditions of praxis. With this expansion, design touches a variety of contested areas. Designers are continuously challenged by conflicts and edge conditions, having to mitigate between both scales of conflict and the vested interests of individuals. In the global climate of population increase and the prevalent reduction of financial resources the question and theorization of shared capacities will remain part and parcel of future of design thinking. The four thematic clusters contained here exploit the theoretical and philosophical themes related to the large commoning "problematique," providing designers better grounding in the networked context of the twenty-first century. The explicit theorization of design and the commons will explore the implicit relations through each of the collected contributions to show how this philosophical construct can be explicated in the context of network collectives and transdisciplinary approaches that currently inform design practices.

Keywords Design commons · Social · Culture · Ecology · Transdisciplinary

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1   (De)sign Expressions

Examining the etymology of the word "design," one comes to a startling conclusion: design, simultaneously, refers to a multitude of diverse conditions. As philosopher Vilém Flusser explains, design as a noun can refer to a "purpose," a "plan," a "goal" or a "form"; at the same time, as a verb, to design means to "concoct," to "draft," to "sketch" or to "shape" (Flusser 1995, 50). In any case, and that is significant to us, design is derived from the Latin word *signum*, which literally means a sign. Therefore, design in its original *disegnare* can be directly understood as "expressing a sign." We will claim that it is of great importance to define design in its original relation with expression, rather than limiting it to specific practices (such as drawing, tracing, outlining, or modelling). Design, first and foremost, is the practice of expressing signs.

Necessarily, this leads us to a broader discussion: how can we understand signs and their expression? Let us examine them both in brief. One of the most common mistakes when it comes to signs, is to approach them strictly semantically or syntactically; in other words, to confine them only within the disciplinary boundaries of linguistics. On the contrary, we will posit that when it comes to design practices, signs should be placed in a different, third category of information. In this sense, signs belong to a pragmatic level: how can a sign affect the behavior of both a transmitter and a receiver? Consequently, we can understand signs as "meaning." Nonetheless, confusion arises, precisely because once again, the common tendency is to give to language alone the privilege of producing meaning. As philosopher Manuel DeLanda claims, our confusion regarding the word "meaning" comes from the fact that "meaning" has two meanings: signification and significance, one referring to semantic context, the other to importance and relevance (DeLanda 2006, 22). It is the second meaning of "meaning" that we have in mind here: How signs are communicated throughout living systems? How can one find meaning in the actions of another?

As such, signs (understood as meaning) can be conceptualized as the very feeling of crossing a threshold. Among an infinite number of actions and perceptions, some do indeed cross a limit that transform them to something that has a certain significance for us. In this manner, we can provide an initial reformulation of the term design: to express meaningful actions and perceptions. What about the term expression then? As sociologist Antoine Hennion suggests, it is again interesting to examine its etymology (Hennion 2016, 84). Initially, it comes from the Latin *expressare*: *ex*, "out," and *pressare,* "to press." Expression then literally means to press out, to squeeze, to extort: expression is a coming out (Hennion 2016, 84) A coming out of where however? Moreover, if to express is to press out, then towards where is this pressure oriented, where does it lead? What is being pressured, to afford something to come out of it? It would be misleading to conceive expression as a pressure in extensive terms. In addition, it is equally misleading to conceive it in spatial terms, where pressure stands merely for the force applied to a surface. Quite the opposite, pressure is not force on surface: pressure is force acting on force. In other words,

expression, as the pressure to come out, belongs to the intensive: expression is always an act on the pressurized limit.

Consequently, we can now come up with a complete reformulation: design is the effort to discover, manipulate and cross intensive limits that can eventually lead to the production of meaningful actions and perceptions. Therein lies the focus of this volume. If discovering, manipulating and crossing limits is what design is about, then – by definition – design is at once both technological and collective. To be more precise, it is collective because it is technological and vice versa. To make this clear, we need to provide a broader and more inclusive definition of technology. Without exceeding the scope of this introduction, we will briefly indicate one direction, namely the thought of philosopher Gilbert Simondon. For Simondon, the dichotomy between culture and technology is based on a fundamental misunderstanding of technology which, at least in cultural terms, positions it as a foreign reality (Simondon 2017, 134). For that reason, Simondon proposes the term "technical culture," suggesting a way of thinking which surpasses that conflict. The point of departure for a way of thinking that no longer considers technology and culture apart, is a shift of focus from the usage and utility of technical objects. Aiming to provoke an awareness of the modes of existence of technical objects, one should focus on the genesis of the objects themselves (Simondon 2017, xi).

Simondon does so by developing the concept of technicity. For Simondon, technicity is fully relational since it necessarily deals with a constant becoming. If one aims to avoid reductionism, then, Simondon advises us, one should expand the scope of study beyond the technical objects to the technicity of these objects as a mode of relation between human and world (Simondon 2017, 162). The autonomy of each technical object lies in its relational technicity, since "technical objects result from an objectification of technicity; they are produced by it, but technicity is not exhausted in objects and is not entirely contained in them" (Simondon 2017, 176). In simple terms, technicity deals with how humans relate to and transform their environment through technology and how these relations transform all of them – humans, technology and environment – in turn. In this sense, one could start examining design in its technicity.

How is it though that design technicities produce collectives? It is by turning to philosopher Bernard Stiegler that we can provide an answer. Stiegler is categorical when claiming that technology is responsible for the emergence of any collective (Stiegler 1998). This is the case because technology has the capacity to potentialize particular kinds of both memory and intentionality, what Stiegler refers to as a third, epiphylogenetic kind of retention and protention (Stiegler 1998). Simply put, technological artefacts inscribe and exteriorize the actions of a collective past while simultaneously enabling future interventions. A humble table, for example, is the expression of collective efforts that lasted thousands of years aiming at literally elevating the ground from the earth, enabling a form of sociality that would not have been possible otherwise. In addition, the (fundamentally technological) inscription of plans and ideas on a piece of paper brings people together by exteriorizing the promise of a future that is not here yet. With these two examples, we can understand why Simondon suggests that we should use the term transindividual when

attempting to speak of human subjects and how they evolve: the purely personal and the wholly social constantly co-transform through technology (Simondon 2020).

Design technicities, from a table to a sketch on a piece of paper, spark transindividuality, enabling the conditions for the production of a collective. Simultaneously, our design technicities in their forming of a collective also produce novel ways of thinking, novel ways of reasoning. This is why architectural theorist Sanford Kwinter claims that design is "a highly advanced form of rationality, perhaps the highest there currently is" (Kwinter 2007, 17). To this, Kwinter adds that

> If design is the dominant form of rationality in our era, it is inseparable from the grand machinery of secular striving and making identified by Max Weber a century ago; it compounds our economic, spirito-religious and sensual life into a single yarn: it is *technique* itself. To say that it is what we are, is not necessarily to celebrate, but to cast a warning and an admonition that somewhere the control of our destiny was handed to us and we failed to answer the challenge with either sobriety, ecstasy or thought (Kwinter 2007, 17, emphasis in original).

Therefore, it is of the greatest importance to examine how our design technicities produce both the world and us, the subjects that live in it. Furthermore, it is of equal importance to elaborate on how we, the (self)designed subjects of a (hetero)designed world, come together and, transindividualy, form collectives. However, and this is one of this volume's ambitions, perhaps of greater importance is to speculate on how we could – through our design technicities – produce new ways of being and becoming collective, ways that would eventually produce both a new world and a new people. In this sense, it is imperative to examine design technicities in their relation to the commons and to practices of commoning, since both have long been considered the purposeful intentionality behind the formation of any collective body.

2   Commons and Commoning

The word "commoning" derives from the wider concept of the commons, a term that has deep philosophical and theoretical roots dating back to the ideas of Plato and Thomas Hobbes. In the contemporary sense, the mechanization of commoning as an operative concept provides the foundation of an alternative and heterogeneous socio-economic model within the public sector but beyond the dichotomy between public and private. Its echoing effect has led to the fusion of the concept with a variety of design domains as for example game design, spatial design and product design.

The commons as a concept relies on an understanding of how natural recourses –referred to as "common-pool resources" – are co-shared among a number of individuals and collectives. The very act of producing, managing, sharing and distributing these common resources is what we refer to as the act of commoning. It is a concept that transverses social, economic, technological, and scalar questions. Commoning embeds its functionality within small groups (the users of a kitchen) or in a wider domain, within the civic (in public spaces and parks). As such,

it is both local (a village) and global (use of the oceans) and can materialize in a restricted (a house) or boundless (immigration) format. In other words, and in connection to our entry point regarding a renewed understanding of design, commons and their commoning refer to all the collective technicities that we deploy in order to change our environment and ourselves.

Complementing our approach, this volume will build on Elinor Ostrom's original publication *Governing the Commons* (1990), which questioned the dominant models of managing and sharing natural as well as human-made resources. With the revival of the concept in economics (from thinkers such as Ronald Coase or Albert O. Hirschman) and sociology (one can think of Rosabeth Moss Kanter), Ostrom's contribution was a sociologically oriented empirical approach that helped to explain how some institutional arrangements have helped several communities to manage their commons and maximize community welfare, in some cases, for centuries.

The commons materialize where the private interests of the individual are set against the shared interests of a collective. In a historical context, this "individual versus collective" establishes specific understandings of reciprocity among kin. Closer examination of social crises has shown the effectiveness of the commons in addressing moments of uncertainty as a social problem-solving model. Co-operation in food gathering, child rearing, and defense – in whatever formats – remained co-dependent on a broader collective action. As Ostrom states, "collective-action problems pervade international relations, face legislators when devising public budgets, permeate public bureaucracies, and are at the core of explanations of voting, interest group formation, and citizen control of governments in a democracy" (Ostrom 1998, 1). The commons, in the more contemporary sense, has reverberated into the domains of political ecologies, and as such the very nature of political-economic approaches to territory, governance and types of economies (Ostrom 1998). Therefore, despite its origins in classic political philosophy, the commons has become transdisciplinary in application. It has affected discourses around asset management, environmental ecologies, urban design, geopolitical debates on human rights, and the production of knowledge. It has relied on rational choice theory, related to game theory (Ostrom et al. 2008) and the theory of public commodities to reformulate economic positions away from dominant economies of consumption, speculation and exchange.

For thinkers such as David Bollier and Silke Helfrich (2015), the structural conditions of the commons has delivered compelling patterns of engagement at three levels. First, the processes of the commons, its co-action, co-production or co-operating – either at scales of a high-rise, in an urban village deeply embedded in rural regions, in artistic communities, research settings, or related to collectives in cyberspace – remains a universal necessity. Put succinctly, one way or another, we are all in need of being involved in the very technicities that determine how we produce and manage our shared resources. Secondly, to this effect, although the commons may be regarded as a social occurrence derived from outdated principles, it still retains a modest appreciation in hyper-industrial and modernized societies. Thirdly, the commons define an "open source" paradigm shift. In this shift, the commons represents a repositioned world view, one that influences both material,

formal and conceptual conditions as a process: fab labs, hacker spaces, jamming, the sharing economy, the reformation of the civic, types of governance, the private, the public and, as such, the urban, are each reframed once placed within the domains of the commons concept.

In this direction, philosophers Michael Hardt and Antonio Negri (2009) expand on the Marxist analysis of political-economic systems, setting the commons logics against the advantages and disadvantages of diverse governance models, economic systems and social movements. In the field of architecture theory, Hardt and Negri's position has been situated within the specifics of public space, linking the commons to self-organized empowerment struggles (Sohn et al. 2015). The discussion of a variety of social movements explicates how both publicness and the urban rematerialize through the self-organization of social bodies in an attempt to expose latent possibilities within the civic and urban space in times of crisis. The work draws strongly on architect Stavros Stavrides (2016), linking urban spaces to the commons in periods of urban activism.

From another angle, the commons has created a balance between different domains of knowledge in data culture. Defining knowledge as a specific commons, the information paradigm has become decentralized in both its production and ownership. Intelligences, intellectual property and the civics' role are tested through digital information which has, in the conventional sense, always been closed-off and commodified. For Ostrom, irrespective of whether it is labelled "digital," "electronic," "information," "virtual," "communication," "intellectual," or "technological," (Ostrom 2008, 5) the information and knowledge domain speaks to the sharing of a common field where materiality, know-how and data are collective by default. In this light the common-pool resources become economic as well as legal in nature, differentiating the "rights to" from the "rights from" in terms of who has access to information and who can derive rights from each data set.

References to the legalities of common property (Bromley 1998; Ciriacy-Wantrup and Bishop 1975), transference of rights and the open access of knowledge, in whatever format, remain at the heart of the questions posed in the light of the knowledge-commons versus knowledge-economies, materialized in the various licenses to use, distribute or take part in commercial enterprises. In respect to digital media and popular culture, a range of practices from social media to game modifying communities has long helped to destabilize the traditional idea of centralized authorship. Media texts or video games are not only remixed and reconfigured, redefined and deconstructed by "small" actors, but alternative economies and new ways of doing have emerged on the side. Everything from "participatory media" and "fandom" to "piracy cultures" and "Kickstarted" design education is in one way or another linked to a broader idea of the commons.

In parallel, the commons concomitantly expose certain drawbacks. As outlined by ecologist Garrett Hardin (1968) in what is termed the "tragedy of the commons," the imbalance of supply and demand exponentially affects structural as well as long term effects. Irrespective of its application in a spatial domain, in the eradication of illnesses, or in its continued advocacy of "the public good," the complexity of balancing market-driven needs and resource availability may irreversibly transform all the conditions of both common good and how various systems are brought together.

Ostrom et al. (2008) herself mechanizes the praxis of design when postulating principles for governing sustainable recourses. Among others, design remains a necessary skill when mechanizing the commons, articulating definable boundaries, determining the proportional balance between benefits and costs, making collective choice arrangements, strategizing conflict resolution, and minimally recognizing the right to organize nested enterprises and even design pedagogies (Freire 2007).

As is obvious from this short overview of the diverse lines of thinking that the commons generates, little has been done so far in terms of exploring explicitly its relation with design. We are therefore left to question the "common" thread in this conceptual field and its specificity to the design setting. Moreover, despite a recent surge of renewed interest in the social conditions of design, most accounts remain deeply atheoretical. We will claim that a more focused theoretical and philosophical foundation will help problematize the link between commoning and design, and in doing so define the operative theories, concepts and frameworks that influence design thinking across a series of context and conditions.

In the global climate of population increase and the prevalent reduction of financial resources, the question and theorization of shared (collective and technological) capacities will remain part and parcel to the future of design thinking and doing. This volume therefore exploits the theoretical and philosophical themes related to a wider field of a commoning design technicities, providing designers better grounding in the diverse contexts of the twenty-first century. As such, the theorization of design and the commons explores the implicit link through each of the collected contributions to show how this philosophical construct can be explicated in the context of network collectives and transdisciplinary approaches that currently inform design practices.

3 Design Commons…

In this context, and from the overwhelming response to our call for contributions, this book explores four areas of interest. Our selection criteria considered each submission's thematic valance, as well as crossovers with other debates. From the range of articles included in this volume, it has become clear how active spatial practices have been, and remain to be, in questioning design and the commons. This brings to question why so few voices are evident within the established domains of product design or in the emergent domains of service design, experience design, or even policy design in questioning the commons.

3.1 …and the Social

Reconsidering *design, the commons and the social* is a natural point of departure, representing the first thematic cluster. The inclusion of the commons in the social realm exposes deep rifts in both the use and application of social models, social life and of being "social." To this effect, Dorina Pllumbi reflects on the field of power

relations generated by collective and emancipatory initiatives in Tirana, Albania, against the developmental pressure of state-led coalitions, questioning perpetual and long-lasting relations through spatial practices. Plumbi highlights that "collectivities" are still present, active and resistant, despite the corrosion of the notion of the collective itself after multiple decades of both totalitarian state control and neoliberal policies. In addition, Plumbi reminds us that eliminating the traditional binaries that are associated in any discussion of the commons (i.e., public versus private, individual versus collective) without overcoming them in action, can eventually cause more damage than good. As such, by referring to the Spinozian *conatus* (the driving force of each individuation) Plumbi asks what a political body can do when faced with the need to organize itself in order to tackle a specific (design) problem.

Maria Reitano and Nikolaus Gartner deepen the discussion of resilient social systems through co-design, focusing on self-production, co-production and re-production to situate identity and technical knowledge. Focusing on co-design as a practice of "doing together," a renewed understanding of design knowledge is presented. For Reitano and Gartner, it is a collective "know-how" that matters and not just the acquisition of a factual "know-that". This collective "know-how" emerges through production itself (be it self-, co- or re-production) and by embracing the contingency of common design practices, binds a collective together. In other words, for Reitano and Gartner, a *praxis communis* is always produced and never a given, brought forth by the intricate experiential bonds of common action and knowledge production.

The contribution by Chun Zheng directs the discussion towards the commons in the framework of resilience thinking. For Zheng, the notions of scaling-out, scaling-up and scaling-deep crystallize a commons triad that unifies regional agendas, social agency and resilience strategies. By understanding urban commons as something radically different than natural commons, Zheng highlights the importance of practices of governance that emerge as the capacity to respond to disturbances and endure over time. As such, urban commons becomes a matter of sustainment and resilience, constituting therefore a dynamic social process. It is this complex dynamism that scaling-out, scaling-up and scaling-deep examine. Zheng concludes her article by underlining that the value of urban commons (and their spaces) is not merely the value of land and buildings, but, crucially, the value of people and their collective activities. In doing so, Zheng makes clear that by focusing on the importance of the collective production of new norms and values, a renewed definition of commoning can appear: to (re)produce in common.

Finally, Daniel Elkin, Chi-Yuen Leung and Xiao Lu Wang's contribution challenges the alignment between commoning practices and architecture's disciplinary limits. Their action research work in Tai O Village, Hong Kong, elaborates the role architectural products play in collaborative governance frameworks. Therefore, they question the degree to which commoning practices affect architectural design, understood now as a decision-making process. Elkin, Leung and Wang continue Zheng's claims on urban commons by highlighting how architectural design asserts its conceptual framework, where potential alignments to commoning occur and how these affect the very foundations of architecture. They do so by placing focus on

architectural production itself as well as the objects (or better said, the products) that are usually associated with architecture, successfully introducing a broadened understanding of design agency.

3.2   …and Culture

The second thematic cluster examines the link between *design, commons and culture.* Frank Bauer and Lasse Sehested Skafte, close to the concerns of Elkin, Leung and Wang, probe a novel understanding of agency and commoning in the digital age. Their perspective outlines an account whereby design is decoupled from linear and sequential processes in favor of intertwined and holistic approaches. In doing so they argue for diverse approaches to the commons that may serve ecologies, economies and foundations of design more actively. By asking how digital designers can reassess their stake between individual and collective modes of production, Bauer and Skafte suggest that a potential transformation in their relation to the commons might occur, proposing a human/non-human assemblage of diverse design agents. Their concept of persistent modelling functions as a speculative design and knowledge tool that through abstraction crosses the thresholds between digital and physical, mediating design knowledge across domains. In other words, the persistent model is a process of continuous modeling that promotes simultaneously both speculation and precise interventions.

Gert van der Merwe posits that the commons should be also understood as part of indigenous systems of spatial production, viewed as an ongoing and relational process in a geography of external power dynamics. Using South Africa as case in point, van der Merwe highlights the differences between the commons of the global North in relation to the global South, where the balance between legitimacy of community is placed alongside a "socially constructed" commons. The case studies he examines stand firmly against the categorical taxonomization of mapping that sediment and immobilize bodies in space, exemplary of the occidental oculocentric representational logics and tools that confuse the map for the territory. Those taxonomies, van der Merwe argues, cannot capture the mobility of pre-colonized Africa, claiming that our tools for approaching the commons do not easily apply in the African context, expressing therefore the need for an immanent and locally bound account of the commons.

Nicholas Frayne's contribution argues for the utilization of uncertainty as a guiding mechanism for narratives that are generated from the lived environment. Linking with the work of Van der Merwe, Frayne harnesses the notions of decolonization, identity and ambiguity to situate a commons where improvisational relationships establish situational environments that support contradiction, flux and connectivity. Frayne advocates an architecture that can make one defamiliarize, suggesting therefore new ways of living (with each other). As such, he essentially proposes that the political is not to be conflated with the personal but rather with a process of continuous estrangement. Ambiguity, for Frayne, is both a conceptual framework and a

social practice that results in the emergence and formation of connections. Therefore, he provides three distinct analytical modes that deal with ambiguity from different yet encompassing perspectives: living with, composing, and encountering ambiguity work in tandem to propose a different understanding of architecture, no longer as a representational practice but rather as the enterprise of forming novel connections.

3.3   …and Ecology

The third cluster focuses on *design, commons and ecology.* Markus Wernli's approach to the commons is through the lenses of living systems and the bio-context of human-waste. Wernli discusses the regenerative, life-giving value chains, arguing for a paradigmatic shift towards bio-economic value creation, a commons distilled from food pedagogies, human nutrients and compost-friendly infrastructures. Wernli claims that human-waste commoning permits communities to regain control over their social reproduction, highlighting the essential biopolitical relations that substantiate any collective formation. An account of human-waste commons, according to Wernli, can revere the ecological use-value of land, partner communities with their non-human counterparts, link collectives with the management of their resources and challenge established food distribution practices. Through different case studies, Wernli makes clear that the often neglected human-waste commons can bring forth a novel, affirmative account of commoning that focuses on fostering modes of collective anticipation that move beyond traditional forms of communal participation and reaction.

In comparison, Piero Medici's historic lens uses the Secondary Reuse Group (SUG) as a form of critique against contemporary aspects of circular economies in light of the commons. Herein, Medici discusses the links between waste as a resource material and the social in light of the common-pool resources. Waste or the "material commons" strikes a fine balance with immaterial commons that is dependent on crafting, negotiating and design experimentations. Following a diverse number of already established accounts on commoning, Medici underlines that common-pool resources can only turn to a commons when communities can actually use them and sustain them, broadening therefore the commons to include inherited natural resources, material humanmade resources and intangible cultural resources. Through the work of SUG, Medici points that the office's design and construction processes not only suggest a move from linear to circular economies, but also manage to bind together all the diverse common-pool resources and effectively turn them to a commons.

Liana Psarologaki and Stamatis Zografos examine ecological and pedagogical models in relation to the commons, through food, fire and affordances. Their debate extends beyond the separate roles each element plays in shaping agents within environmental assemblages, presenting the ramifications of how design contributes to the consumption of environmental and material conditions. Psarologaki and

Zografos approach cooking as humans' primary technical ability, making food, fire and the regulation of their relation fundamental in the very definition of what determines us as species. Opposing the relegation of food and fire to mere infrastructural or hazard-related concerns, the authors propose that we start discussing and practicing food and fire as actual urban commons, moving beyond a state of illiteracy when it comes to the ways that those two constitutive processes define the human. As such, they outline a novel field of urban commons, where food, fire and the design of rituals of collective feasting can both highlight the historicity of our species and remind us our duty towards it.

3.4   …and Transdisciplinarity

Finally, the fourth thematic cluster, *design, commons and transdisciplinarity* explores the implicit link of commoning and how it can be explicated in the context of transdisciplinary approaches that currently inform design practices. Dora Karadima forms crossovers between the social sciences and design theory pertaining to issues of collaboration. Karadima links together three seemingly unconnected fields – design theory, the commons and psychoanalysis – by virtue of deconstructing desire, alienation and separation. Focusing on the work of Jacques Lacan, Karadima uses his psychoanalytical account as an interpretative tool that underlines the importance of autonomy as a necessary precondition for both design and the commons to co-exist in an emancipatory potential. By expanding the discussion on value of the previous thematic clusters, Karadima eventually claims that the commons are determined by the co-production of common values, analyzing this process in terms of both design objects, design processes and design agents.

In comparison, Katarina Moebus relates commoning, care and new materialism within the framework of feminism and Marxist scholarship through situated practices, drawing conclusions about design's inherent political economy to emancipate itself from the coercion driven by market forces. As such, Moebus underlines that design is not merely a problem-solving enterprise but rather acts as the mediating infrastructure through which collectives can address matters of care: what one does to maintain, sustain and repair a common world. Therefore, for Moebus, commoning is to be defined as the design and the practice of constant care. Focusing on examples from her own practice, Moebus makes clear that bringing the commons together with design essentially entails a rethinking of how a community can reproduce itself while ensuring that its common values will not be hijacked by ever looming logics and practices of monetization.

The final contribution by the Contingent Collective (Lörine Vass, Roy Cloutier and Nicole Sylvia) brings the concerns of this volume full circle. They seek, in their argument, to trace the development of the commons in architecture and urbanism to wider cosmopolitical questions that involve agency and responsibility of design. The article postulates a reconsideration of the commons on two fronts: the evolution from a discrete locus (the commons) to a process (commoning), and secondly a shift

away from the primary human decisions towards a "more-than-human" ensemble. The authors ask us to conceive the commons as the politics of connection between all the heterogeneous entities that comprise what we call the social. Therefore, commoning becomes for them the means and the reason for radically rethinking our relation to relation. By developing an account of the commons that includes both common resources, commoning practices and the commoners themselves, the authors underline the contrasting trajectories of a merely managerial understanding of the commons while problematizing their (re)production. Through the practice of drawing together matters of care and drawing together those who have nothing in common (yet), the authors claim that a relational account of the commons needs both a radical rethinking of how it enunciates its relation with the future and a how it can allow for the formation of heterogenous assemblages that can catalyze that futurity.

4   Designing a World

Apart from the editorial introduction, and the threading together of the various concepts and contributions, what other reflections and implications are evident in our initial questions – the influence and new interpretations of design and the commons - in the long term? What synopsis is possible on the specifics of design, and what we outline here as the transmission of new or other design technicities? For what purpose, can these technicities facilitate design thinking?

Our observations highlight a first problem of how design and the commons merge. From either side of the divide, reflecting on the design commons raises questions on how any design – in its domain, disciplinary or material alignment – amalgamates with the domain of the commons. From applied research to more abstract and theoretical, what defines design commons seems to constitute a challenge of linking design itself to either the 'project as commons' or the 'commons as project'. The compartmentalization of either belonging to the commons in a conceptual premise alone or a material strategy that attempts to change engagement or useability, appears in many designs as well as design criticism to be a post-materialization contemplation. The fluidity of the middle ground, of being both a material endeavor as well as an abstraction within the commoning framework, remains a fluid and open challenge for design. Our experience on this specific topic over the last years, has proven that thinking commons versus producing commons will require continuous nurturing and development, as a committed endeavor with meaningful impact, spanning years if not decades.

Following a similar line, as editors we question if the design commons can rely on a priori decisions, harnessing predetermined values and processes. The different polarities between design thinking and actual materialization bring a multitude of novel transdisciplinary challenges; in how and in what way design actions can combine methods from social sciences (socio-ethnographic), critical theory (hypothetical-abductive), data sciences (artificial intelligence, big data) and

fabrication processes (algorithms, computational protocols)? In this, we foresee the emergence of both design as well as research challenges that will continue to test transdisciplinary methodologies by examining how design appropriates suitable analytic methods to advance design thinking, informed from a variety of angles and research perspectives.

In the context of the ecological, biological, and technological environmentalism, the emphasis on robotics, artificial and other forms of intelligences, continues to place diverse tensions on design capacities and potentials. To address those tensions, we foresee a need to destabilize our human-centered understanding of the world by opening and relating it to the heterogeneous technicities that produce it. Positioning technicities first can help in approaching the operative aspects of designing with as well as for the commons. Without falling prey to any form of technological determinism or reductionism, design theories need to develop accounts that can examine the influence of data in design practices, underlining design in its diverse roles: speculative in the mitigation of transversal concepts, synthetic in the modulation of material forms.

As already implied, limited interest for the commons in disciplines such as game design, communication design, graphic and product design is quite telling. In comparison, specific fields, for example interaction design, seem like obvious routes for nurturing design commons, yet remain underexplored. The continuous advocacy for a human-centered world and in this, human-centered design products, shifts design interest towards the individual rather than the (human and non-human) collective. Processes meant to generate shared norms, values and intentions, have become overly homogenized. This might be explained by a fundamental misreading of the value of the commons in the broader sense, as well as the values that commoning technicities themselves can produce. Especially at times of social instabilities, focusing on the individual rather than collective, certainly undermines both the design questions and the design practices.

Specifically, our observations confirm the ease with which the spatial disciplines have taken to the challenge of absorbing the commons in their praxis. The direct link of architecture, urban design, and interior design with the commons demonstrates socio-spatial sensibilities, as spatial designers appear more prone to negotiate socio-technical challenges, from their problematization to completion. This may be due to the nature of spatial disciplines, where the design of a single building, space, or installation, relies on a multitude of parties and processes within negotiated settings, whilst drawing from economy, structural engineering, building technology and diverse (often conflicting) stakeholders to facilitate the design. We extend this question onto other design fields, presenting a challenge that hopefully will show promise over the coming years of design research, in fields as food design, experience design, transition design and alike.

Naturally, the emergence of design fields with a renewed interest in socio-technical issues has recently shown promise in embedding a thinking of the commons as part and parcel of their domains. Disciplines such as social design and service design may provide fruitful grounds from which to further explore the fusion of commoning and design thinking. The redirection from single to

multi-user, not only challenges the premise of product development, perhaps driven by single-sided objectives, but equally requires new and differentiated pedagogies in how such technicities are transferred through design knowledge. The premise of conceptualizing through the commons, coupled to how design groups themselves gather, share, communicate, or produce different settings, reframes the educational premise of the design commons completely. In our view, infusing design pedagogy with the design technicities of the commons will impact the foundations from which designers conceptualize, share and gain knowledge through research processes, outcome disseminations, fabrication models, and material prototyping that sets the tone for long-term thinking in a design community.

Not surprisingly, by questioning the valance of the commons with the spatial disciplines, our conclusions further highlight their tendency to act as a device concept. The distinctions between design disciplines that choose to work with the commons versus those overlooking it, may be linked to the problem of ownership associated with design outcomes. Products, as the singular outcomes of product design, remain for the most part in shifting ownership between (mostly) individuals. The collective sharing of a product, in its use or as a resource, delivers intricacies of proprietorship, monetary values and tenure of use. Who takes ownership of a single product (say a watch or a chair), irrespective of its societal value or aim, remains a consequence of a product-to-individual and not product-to-collective association. The same holds true for the opposite process, where design notions, terms and concepts from domains such as graphic design, fashion design or architecture itself, are often metaphorically adopted from the domain of, for the lack of a better word, 'common' culture, that absorbs, dissects, and further places them away from the original intent. Whereas, surprisingly, other digital media (such as game design) that do involve multi-user scenarios in the values, engagements, and shared ownerships, show greater affinities to the potentials that the commons hold. Irrespective the reason, we foresee the need for further investigations that examine such links and design-commons crossovers.

Finally, the co-dependencies between the design fields, individual users, wider target groups, or their technological appropriation, still places design within a dilemma of delivering novel outcomes. Novel design proposals by default do not inscribe to what we define as the commons or its shared values sets. The challenges presented in the processes of adaptive reuse, recycling, reappropriating, or transforming existing elements, either as products or as material settings, may cause additional strain on the transformation processes, from one technicity to another. Added to this, and in particular relevant to reuse and recycling, other factors, such as heritage, can crystalize competing rationalities along those of the commons, amplifying the challenges of the same problem. Differentiated technicities required for the creation of new material settings, versus reprocessing existing material conditions into diverse configurations seem to shift the design approach per concept and per material scale. The reappropriation of architecture – the enveloping scale of a building or space, versus the scales of a specific product – presents distinctive challenges to the commons that demand a complex and transdisciplinary response. An account of the design commons that wishes to embrace their heterogeneity

needs to be simultaneously transversal, non-reductionist and provide an adequate degree of granularity depending on the problem that if focuses. In this, we urge for the careful consideration of the commons, not as an all-encompassing design mantra universally applied, but as a design position that requires careful consideration per setting, level of complexity and material conditions.

Consequently, what becomes apparent through the ways that the four clusters of this book complement each other is the vast and diverse disciplinary fields that a study on design commons can coalesce. In this sense, and even though only the last cluster is explicitly titled so, the whole volume is an exercise in transdisciplinarity. As such, all the heterogeneous design technicities that are examined in each chapter make clear why a transdisciplinary approach is fundamentally necessary to address the complexities of our current realities. While interdisciplinary research entails the collaboration of different domains, it does so from a point of integration, where any of the disciplines involved share methodologies and theoretical frameworks to work towards a unified – thus, integrated – form of research. On the other hand, transdisciplinary research affords the production of methodological, theoretical and conceptual innovations, novel trajectories that emerge in order to address what binds each discipline: a shared problem. In other words, transdisciplinarity does not obey the constraints of any discourse, but, on the contrary, transforms them to productive opportunities. Examining the commons and their design technicities as a transdisciplinary problem underlines its importance beyond the confines of any specific discipline, focusing not on a *world of design* but rather on the complex processes, assumptions and responsibilities of *designing a world*.

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