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Transforming Power Through Design

Gijs van Leeuwen



Transforming Power through Design

**A Design Anthropological Intervention in the Local Energy
Transition**

Transforming Power through Design

**A Design Anthropological Intervention in the Local Energy
Transition**

Dissertation

for the purpose of obtaining the degree of doctor
at Delft University of Technology
by the authority of the Rector Magnificus,
Prof.dr.ir. H. Bijl,
Chair of the Board for Doctorates
to be defended publicly on
Monday, 8 June 2026, 15:00

by

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Key words: energy transition, design anthropology, power

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Summary

I arrived at the urban gardening initiative feeling out of place as a researcher, and when I explained the purpose of our project, the founder politely explained that they “don’t want anyone observing or studying the people here”. When, at another community center, we explained our interest in investigating how the local energy transition may be more socially exclusive, they told us to “not expect anyone to want to talk about energy.” Finally, other local community leaders were clear that “we know well enough what the problems are... we need real solutions now,” as people had grown tired of answering the same interview questions over and over again. Evidently, the overarching aim of our project - to develop an innovative smart energy platform - was too distant from the needs and concerns of this community; to proceed unreflexively would be to exacerbate these problems. The resulting effort is what this dissertation characterizes as ‘power-work’: an investigation into the powers that enable and constrain our agency as design researchers, into the possibility of building of reciprocal collaborations, and into the tensions which emerge when institutions and communities seek to collaborate.

This dissertation describes an interventionist design anthropology study that investigates how power can be transformed using a design approach. This study is situated in the local energy transition in Amsterdam Southeast, as part of a broad multi-actor consortium aimed at addressing combined social and technological challenges in the energy transition. As such, this study engages with the power relations and dynamics that are implicit in design processes where heterogeneous actors collaborate, that characterize societal transitions and that are inherent in participatory engagements with citizens. The dissertation develops understanding about the relationship between design and power in the context of transitions, and does so by explicating the positionality of the design researcher. This effort cuts across multiple disciplines, as it draws from, and contributes to various research fields, including design research, design anthropology, energy studies and transitions studies.

Research questions

This study is guided by two main research questions, which are:

1. What is the relationship between design and power, in the context of transitions?
2. How can design address and transform power in the context of transitions?

Approach

The research approach is based on design anthropology, and characterized by an ethnographic and interventionist methodology. As such, this approach aims at working constructively with collaborators by fostering reciprocal social relations, and by pro-actively and reflexively participating in design processes. In doing so, issues and tensions of diverse forms are identified and conceptualized in terms of power. Through an engagement with literature, these insights amount to insights on the relationship between power and design, as situated within the context societal transitions.

Context

The field for the empirical study is constituted by a single project in Amsterdam Southeast. This project had the dual aim of developing smart solutions for congestion of the local electricity grid, as well as ensuring that these solutions could be socially inclusive for residents of a local neighbourhood. The design anthropology approach was used to organize co-creation workshops and participatory engagements with stakeholders and local residents. The configuration of the project was reframed in this process, whereby the goal was not only to generate academic knowledge, but also to contribute to local societal interests, in particular to the interests of the local neighborhood.

Findings

The research was conducted through 3,5 years of fieldwork, and reported in several parts which have a different disciplinary and conceptual emphasis. The different parts including their key findings, are briefly described below.

Part 1: Research Design and Framework describes the setup of the study. Firstly the research design is described, which is founded on a situated and transdisciplinary approach, on a relational and action-based ontology, and on

ethnographic and co-creation methods. Secondly, this part positions a conceptual framework that characterizes the relationship between design and power, in the context of transitions. This framework is the primary outcome of this study, and is referred to throughout the rest of the dissertation.

Part 2: The Frictions and Ethics of Intervention describes the initial ethnographic interventions that were conducted in the project and the neighbourhood. Key initial findings included that the local neighbourhood was dealing with participation fatigue and extractive research, and that the project aims were disconnected from their needs. It is through these findings that power became the central phenomenon of interest in this study. Hence, importantly, intervention is the starting point for this study, not the end-result: it is through these initial interventions that the aims, questions and focus of this study emerged.

Part 3: Negotiating Futures and Fictions engages with the temporal dimension of design, and investigates how issues of power are entangled with temporality. Firstly, it provides a conceptual exploration of how design fiction may be used to support human-centered energy transitions. Secondly, it provides a more elaborate account of how design anthropology can be used for the making of futures, beyond their envisioning or conceptualization. It does so by describing an original approach of Ontological Future Making, and by contributing an aspect of transformative action to existing work on design anthropology. Using these concepts, the empirical findings describe how efforts were made to interpret, engage and transform the tensions which characterized the project. Overall, this part recommends for future making to be more direct, relational and political.

Part 4: Transforming Power Relations in the Local Energy Transition engages more explicitly with the concept of power. First of all, it provides a conceptual discussion of the relationship between power, design and transitions, and describes three power relations that were encountered, intervened within, and transformed. Based on these findings, this part makes recommendations about how designers should engage with power in various ways. Furthermore, this part also integrates power theory with economic anthropology, and mobilizes theory on reciprocity to position a novel

framework with diverse types of power relations. This framework distinguishes symmetric and asymmetric power relations, and characterizes both symmetric and asymmetric power relations for different kinds of reciprocity. In this way, this framework provides insight beyond the commonly recognized distinction between power-with and power-over.

Conclusions

Overall, this study conceptualizes the relationship between power, design and transitions by distinguishing five dimensions, each of which integrates the previous one. The first dimension is agency, as designers must explicate and chart their own exercise of agency, which is defined as value-laden action which opens up to contestation. The second dimension is relationality, in which power relations are defined as the interdependencies in capacity for action. The third dimension is scale, which concerns the implications for designerly activity in diverse contexts, such as local communities or institutionalized policy contexts, and in particular the relation between. The fourth dimension is temporality, in which power dynamics are characterized by an interplay of mechanisms of emergence and control. The fifth dimension is abduction, which concerns how non-human design actors – such as artefacts, concepts and visualizations – in power dynamics. For designers who are active in the context of societal transitions, this dissertation characterizes transition-design-as-power-work, and considers designers as brokers of power. It recommends that designers go beyond the aim of balancing power relations, to consider power asymmetries as a reality to be faced and worked with, and to focus on building constructive and reciprocal relations and collaborations.

Samenvatting

Ik voelde me al misplaatst als onderzoeker bij de buurttuin, en toen ik het doel van ons onderzoek uitlegde, vertelde de oprichter beleefd dat ze "liever niet hebben dat iemand de mensen hier observeert of bestudeert". Toen we bij een ander buurtcentrum toelichtten dat we onderzoeken hoe de lokale energietransitie sociaal inclusiever kan worden, werd ons verteld dat we "niet moeten verwachten dat iemand over energie wil praten". Tot slot waren andere leiders van de lokale gemeenschap ook erg duidelijk: "we weten goed genoeg wat de problemen zijn... we hebben nu echte oplossingen nodig". Bewoners waren het beu om steeds weer dezelfde interviewvragen te beantwoorden. Kennelijk stond het doel van ons project – het ontwikkelen van een innovatief slim energieplatform – te ver af van de behoeften en zorgen van deze gemeenschap; zonder wijzigingen doorgaan met ons onderzoek zou de problemen alleen maar verergeren. De inspanningen die voortvloeiden uit deze ervaring, is wat dit proefschrift typeert als 'power-work': een onderzoek naar de machten die ons handelingsvermogen als ontwerponderzoekers mogelijk maken en beperken, naar de mogelijkheid om wederkerige samenwerkingen op te bouwen, en naar de spanningen die ontstaan wanneer instituties en gemeenschappen proberen samen te werken.

Dit proefschrift beschrijft een interventionistische studie binnen de ontwerp-antropologie, die onderzoekt hoe macht getransformeerd kan worden middels een ontwerpde aanpak. Deze studie is gesitueerd in de lokale energietransitie in Amsterdam-Zuidoost en maakt deel uit van een breed multi-stakeholder consortium dat gericht is op het adresseren van sociale en technologische uitdagingen in de lokale energietransitie. Als zodanig onderzoekt deze studie de machtsverhoudingen en -dynamieken die impliciet zijn aan ontwerpprocessen waarin diverse actoren samenwerken, die kenmerkend zijn voor maatschappelijke transitie en die inherent zijn aan participatieve trajecten met burgers. Het proefschrift ontwikkelt inzicht in de relatie tussen ontwerpen en macht in de context van transitie, en doet dit door de positie van de ontwerponderzoeker expliciet te maken. Deze inspanning overstijgt meerdere

disciplines, waaronder ontwerponderzoek, ontwerp-antropologie, energie studies en transitiestudies.

Onderzoeksvragen

Deze studie wordt geleid door twee hoofdonderzoeksvragen:

1. Wat is de relatie tussen ontwerpen en macht, in de context van transities?
2. Hoe kan een ontwerpende aanpak macht adresseren en transformeren in de context van transities?

Methodologie

De methodologie van het onderzoek is gebaseerd op de ontwerp-antropologie, en wordt gekenmerkt door een etnografische en interventionistische aanpak. Als zodanig richt deze aanpak zich op constructieve samenwerking met betrokkenen door het bevorderen van wederkerige sociale relaties en door proactieve en reflexieve deelname aan ontwerpprocessen. Hierdoor worden vraagstukken en spanningen van diverse aard geïdentificeerd en geconceptualiseerd in termen van macht. Op bases van interactie met de literatuur leiden deze inzichten tot kennis over de relatie tussen macht en ontwerpen, binnen de context van maatschappelijke transities.

Context

De context voor de empirische studie wordt gevormd door één enkel project in Amsterdam-Zuidoost. Dit project had het tweeledige doel om slimme oplossingen te ontwikkelen voor netcongestie van het lokale elektriciteitsnet, en om tevens te waarborgen dat deze oplossingen sociaal inclusief zouden zijn voor bewoners van een lokale buurt. De ontwerp-antropologische benadering werd ingezet om co-creatie workshops en participatieve sessies met stakeholders en buurtbewoners te organiseren. De structuur van het project werd in dit proces opnieuw vormgegeven, waarbij het doel niet alleen was om academische kennis te genereren, maar ook om bij te dragen aan lokale maatschappelijke belangen, in het bijzonder de belangen van de lokale buurt.

Bevindingen

Het onderzoek is uitgevoerd gedurende 3,5 jaar veldwerk, wat wordt gerapporteerd in verschillende delen die elk een andere discipline en

conceptuele nadruk hebben. De verschillende delen, inclusief hun kernbevindingen, worden hieronder kort beschreven.

Part 1: Research Design and Framework beschrijft allereerst de onderzoeksopzet, die gebaseerd is op een gesitueerde en transdisciplinaire aanpak, op een relationele en actie-gerichte ontologie, en op etnografische en co-creatieve methoden. Daarnaast beschrijft dit deel een conceptueel raamwerk wat de relatie tussen ontwerpen en macht, in de context van transitie, beschrijft. Dit raamwerk, waar naar wordt gerefereerd in de rest van de dissertatie, is de belangrijkste uitkomst van dit onderzoek.

Part II: The Frictions and Ethics of Intervention beschrijft de initiële etnografische interventies die werden uitgevoerd in het project en de buurt. Belangrijke bevindingen waren dat de lokale buurt te maken had met participatiemoedigheid en extractief onderzoek, en dat de doelstellingen van het project ver verwijderd waren van de behoeften van bewoners. Door deze bevindingen werd macht het centrale fenomeen van interesse in deze studie. Derhalve is interventie het startpunt voor deze studie, en niet het eindresultaat: juist door deze initiële interventies ontstonden de doelstellingen, vragen en focus van dit onderzoek.

Part III: Negotiating Futures and Fictions houdt zich bezig met de tijdsdimensie van ontwerpen en onderzoekt hoe machtskwesties verweven zijn met temporaliteit. Ten eerste biedt het een conceptuele verkenning van hoe design fiction gebruikt kan worden om mensgerichte energietransities te ondersteunen. Ten tweede biedt het een uitgebreider verslag van hoe ontwerp-antropologie kan worden ingezet voor het maken van toekomst, voorbij enkel de verbeelding of conceptualisering ervan. Dit wordt gedaan door een originele benadering van 'Ontological Future Making' te beschrijven en door een element van 'transformative action' toe te voegen aan bestaand werk over ontwerp-antropologie. Gebruikmakend van deze concepten wordt beschreven hoe pogingen werden ondernomen om de spanningen binnen het project te interpreteren en transformeren. Op basis hiervan beveelt dit deel aan dat toekomststrategieën directer, relatiegerichter en politieker moet zijn.

Part IV: Transforming Power Relations in the Local Energy Transition gaat expliciet in op het concept macht. Allereerst biedt het een theoretische discussie over de relatie tussen macht, ontwerp en transitie, en beschrijft het drie machtsverhoudingen die werden aangetroffen, waarin werd geïntervenieerd en die werden getransformeerd. Op basis van deze bevindingen worden aanbevelingen gedaan over hoe ontwerpers op verschillende manieren met macht om zouden moeten gaan. Verder integreert dit deel machtstheorie met economische antropologie, en maakt het gebruik van theorie over wederkerigheid om een nieuw raamwerk met diverse typen machtsverhoudingen te creëren. Dit raamwerk onderscheidt symmetrische en asymmetrische machtsverhoudingen en karakteriseert zowel symmetrische als asymmetrische machtsverhoudingen voor verschillende soorten wederkerigheid. Op deze wijze biedt dit raamwerk inzicht dat verder reikt dan het erkende onderscheid tussen 'power-with' en 'power-over'.

Conclusie

Deze studie conceptualiseert de relatie tussen macht, ontwerpen en transitie door vijf dimensies te onderscheiden, waarvan elke dimensie de voorgaande omvat. De eerste dimensie is agency, aangezien ontwerpers de waarden waarnaar zij handelen expliciet moeten maken. De tweede dimensie is relationaliteit, waarbij machtsrelaties worden gedefinieerd als de onderlinge afhankelijkheden in handelingsvermogen. De derde dimensie is schaal, wat betrekking heeft op de toepassing van ontwerpen in diverse contexten, zoals lokale gemeenschappen of beleidscontexten, en in het bijzonder de relatie daartussen. De vierde dimensie is temporaliteit, waarbij machtsdynamieken worden gekenmerkt door een wisselwerking van mechanismen van emergentie en controle. De vijfde dimensie is abductie, wat betreft hoe ontwerpobjecten - zoals artefacten, concepten en visualisaties - een rol spelen in machtsdynamieken. Voor ontwerpers die actief zijn in de context van maatschappelijke transitie, typeert dit proefschrift transition-design-as-power-work en beschouwt het ontwerpers als power-brokers. Het beveelt ontwerpers aan om verder te gaan dan het balanceren van machtsverhoudingen, en machtsverschillen te beschouwen als een realiteit waarmee gewerkt moet worden, en om te focussen op het bouwen van wederkerige relaties en samenwerkingsverbanden.



1

INTRODUCTION

I arrived at the urban gardening initiative on a Wednesday morning, feeling somewhat out of place as a male university researcher, coming to a safe space intended for the empowerment of local women. The gardening coach warmly welcomed a helping hand in the garden, but when I explained my interests as a researcher, I sensed some distance and alienation. Later, the founder of the initiative was more direct: she politely explained that researchers visit their initiative "quite frequently", and that they "don't want anyone observing or studying the women".

A similar occurrence took place at another community center, which I visited during coffee hour together with a student. As we entered, sat down and started to engage in conversation, an attendant loudly exclaimed, "Who are these people, and why are they here?" We explained that we are researchers, and would like to learn more about the needs of this neighborhood and the people who live here. The woman who was pouring coffee proceeded to question us: "Ok, but what project are you connected to? How is your research funded?" We explained the purpose of our research: we are working on the topic of energy transition, and investigating how it can be more socially inclusive. This did not pique her interest, as she said "You can sit down, but don't expect anyone to want to talk about energy".

A bit more hopeful was our involvement at a local youth center, as the local leaders were happy to have us around as volunteers, and open to help us with our research. But their message was clear: any research that happens in this area must create value for the community. They told us that plenty of research had already been done: "We know well enough what the problems are... we need real solutions now." Reportedly, people had grown tired of answering the same interview and questionnaire questions over and over again. And energy transition was not an interest for them: "If some old white guys come here to 'do energy transition', it will generate a lot of distrust". Unfortunately, the roof of this center collapsed a few weeks later, which nipped our collaboration in the bud.

These experiences gave rise to uncomfortable questions and realizations. Evidently, the overarching aim of our project - to develop an innovative smart energy platform, which would reduce grid congestion and provide new services to energy asset owners - was incredibly distant from the needs and concerns of this community. There were not even any households with rooftop solar panels in this area, how could they ever participate in a smart energy platform? What is the purpose of our project, and what are we contributing to this neighborhood? As a PhD researcher, there was a constant pressure to both 'get the data' for academic purposes, and to 'engage the neighborhood' to inform the design of the 'smart energy platform'. Both of these things seemed impossible as well as undesirable: the neighborhood had a history of participation fatigue and extractive research. To proceed unreflexively, would be to exacerbate these problems.

How should we reflect on our role as researchers – what should be our purpose here? Are there opportunities to reframe the purpose of our project, into something more meaningful for the local community? How do we negotiate with the interests of our partners, including the municipality, local large businesses, and engineers in energy technology? How does this challenge our understanding of how designers, and researchers, should act in energy transitions, as well as other societal transitions? Can we expect residents to invest their free time and efforts, into a project that is not intrinsically interesting to them, and that does not result in benefits for their neighborhood? The resulting effort is what this dissertation characterizes as ‘power-work’. It is an investigation into the powers that enable and constrain our agency as design researchers, into the building of reciprocal collaborations, into the co-shaping of power with the emergence of desirable futures, into the tension between institutions and communities, and into how ‘designs’ co-shape with power.

One might say that the fieldwork, which gave rise to the interactions described above, was initially framed as the typical effort of a design researcher. I was part of a greater project consortium, the LIFE project, which aspired to develop innovations to address complex problems in the local energy transition in the city district of Amsterdam Southeast. It was my task to investigate ‘the social side’ of these innovations: I had to obtain an understanding of the needs and wishes of the residents of a local neighbourhood, Venserpolder, and facilitate a participatory process with the community.

The conversations with local residents, as described in the vignette, derailed these aspirations. It significantly changed my focus as a researcher: rather than ‘conducting research upon the neighbourhood’, my attention was drawn towards the greater structures, developments and forces which had shaped, and were shaping, the ambitions of the LIFE project. After all, it had become clear that somehow, these greater forces were not oriented properly. Rather than addressing the needs and concerns of residents in this neighbourhood, they had contributed to problems which people were experiencing. Well-intentioned research resulted in people being treated as data reservoirs, and participatory engagements initiated by the municipality had not resulted in the desired benefits, and were perceived as a waste of time and effort.

It struck me that, somehow, I should harness my role and agency as design researcher to address this problem. It is for this reason that the main topic of this dissertation is *power*. Power appeared to me as the best term to describe the imposition of interests upon a local context, and the manner in which these interests captured and structured the design process of the LIFE project. Likewise, efforts to contest, renegotiate and transform these interests may also be seen through the lens of power – in fact, they are in this dissertation defined as forms of power. Power is inherent to the manner in which diverse aims and purposes are negotiated, to the manner in which some outcomes are favoured and stabilized over others, to the relationship between local, institutional and societal domains. Hence, intervention is the starting point rather than the final outcome of this study. Instead of carefully crafting a designerly intervention based on extensive research, prototyping and experimentation, this study investigates how society is already being intervened in, and how this happens through the positionality of the design researcher. By doing so, it provides insight into the opportunities and constraints which design researchers have to redirect their activities towards societally beneficial outcomes. By engaging with diverse scholarly literatures, these insights are further extended towards the roles of researchers and designers.

An engagement with power turns design into a political endeavour. Whilst the political dimension of design has been emphasized in fields such as participatory design (Björgvinsson et al., 2012), infrastructuring (Bossen et al., 2014) and design for civics (DiSalvo, 2022), the relationship between design and power remains underemphasized (Gaziulusoy and Ryan, 2017; Loorbach, 2022; Van der Bijl-Brouwer, 2022). For example, recent design scholarship calls for more conceptual insights on the relation between power and design (Tomasini Giannini & Mulder, 2022) and for increased focus on the power dynamics which are implicit in participation (De Rosa et al., 2023; Udoewa & Gress, 2023). As a situated exploration rather than purely conceptual one, however, the relationship between power and design should be informed by scholarly work on the activities of designers in societal transitions (Ceschin & Gaziulusoy, 2016). After all, power and politics are inherent to transitions, as diverse actors aim to achieve goals, negotiate their interests between short- and long-term futures, and between local and national scales (Avelino & Rotmans, 2009; Köhler et al., 2019). As such, the manner in which designers facilitate complex multi-actor collaborations (Geenen et al., 2022), organize co-creative engagements with

citizens (Björgvinsson et al., 2012) and visualize and frame diverse transition processes (Goss et al., 2025) are also a key interest. In investigating the relationship between design and power in the context of transitions, designers' work becomes characterized as power-work.

In engaging with these literatures, this study investigates how the LIFE project was itself shaped by, or even constituted by, a complex negotiation of interests between diverse stakeholders, including the municipality of Amsterdam, energy technology companies and local businesses in Amsterdam Southeast. This consortium itself was furthermore shaped by greater developments in the Dutch transition to renewable energy. In particular, the LIFE project aimed to develop innovative solutions for complex and conjoined social and technical challenges in the local energy transition. Specifically, the LIFE project aimed to address challenges of grid congestion (De Winkel et al., 2025; Hadush & Meeus, 2018) as well as energy poverty (Day et al., 2016; González-Eguino, 2015) and social inclusion (Sareen, 2021). Its intention was to combine academic research with societal impact: to produce knowledge while creating value for local stakeholders, including residents and businesses.

With the term "local energy transition", I refer to a broad landscape of developments and issues within which the LIFE project was situated. The transition from fossil to renewable energy is prompted by national and supranational policy goals for CO₂ reduction, which have become ever more ambitious in recent years (Dupont et al., 2024). As a result, households are rapidly adopting new energy technologies such as rooftop solar panels and electric vehicles (World Energy Outlook 2025, 2025). New energy systems based on renewable energy are expected to require local and integrated solutions, where local energy generation and consumption assets are integrated in smart local energy systems (Ford et al., 2021; Knox et al., 2022), and where households increasingly adopt innovative smart energy products and services (Geelen et al., 2013; Kloppenburg & Boekelo, 2019). Furthermore, energy communities are described as a promising avenue for citizens to collectively organize and adopt local ownership over energy assets and systems (Bauwens et al., 2022). These developments are further giving rise to questions of sociopolitical nature, for example in energy justice (Calver & Simcock, 2021; Sovacool & Dworkin, 2015), as there are concerns that the benefits of renewable energy technologies are not equally distributed, and primarily reserved for affluent and pioneering households (Schleich, 2019; Sovacool et al., 2022). In general, energy transitions

may be characterized as politically contested rather than technocratically defined (Stirling, 2014).

As a designer researcher, I conducted power-work in the local energy transition in Amsterdam Southeast as part of this study. On the one hand, this served the purpose of theorizing the relationship between power, design and transitions, as well as fostering a design approach which can engage with, and transform, issues of power. It is these aims which this dissertation primarily reports on. Importantly, however, the significance of political action should extend beyond the domain of academic research, and the power-work which was performed in this study has an important non-academic dimension. This pertains to the manner in which the LIFE project aims could be redirected, not only for research purposes, but to create value for the neighbourhood of Venserpolder. During the project, these efforts resulted in the initiative to establish a local energy community, together with residents. Whilst this aim was technically achieved, the matter of its success remains ambivalent, as the initiative continues to be shaped and constrained by diverse forms of power. It was a challenging endeavour which came with plenty of failures and learnings, which were derived from the collaborative efforts with the municipality, commercial actors and researchers, and most importantly, from the engagements with local residents from the Venserpolder neighbourhood. This collaborative and interventionist process was messy, complex, and uncertain, and resisted any attempts to control outcomes and activities, and to get a firm grip on the project context. Importantly, however, these aspects are here considered as inherent features of designerly intervention in complex transition contexts. Rather than using epistemic operations to abstract away the messiness as out-of-scope, this research acknowledges and embraces this messiness. Thereby, it aims to do justice to the complexity of the issues addressed. In engaging with these complexities, it is the effort to create real benefits for the neighbourhood which I consider as a legitimation of this research, more than any academic assumptions, principles or methods adopted.

In this way, this dissertation addresses questions such as the following. How can design researchers exercise agency to co-shape transitions, and what forms of power enable and constrain this agency? How can design researchers mediate complex multi-actor collaborations by navigating value conflicts, disagreements, and diverse ways of working? How can design researchers

account for both the present and the future, when diverse actors have very different timelines for planning and acting? And how can they work across multiple scales, connecting with both local communities and institutional regimes? Rather than taking the birds-eye view of the detached scholar, these questions are engaged from a situated positionality in a real energy transition project. Hence, the answers to these questions are not merely of theoretical interest: they should guide designerly action in the world, as it is from such action that the answers were derived.

This introductory chapter provides a high-level overview of the research presented in this dissertation. Section 1.1 lists the main research questions, Section 1.2 discusses the fields of academic research that this dissertation engages with, and Section 1.3 describes the empirical research context.

1.1 Research Questions

The aim of this research is twofold. The first aim is to investigate the relationship between design and power in the context of societal transitions. The second aim is to develop an approach that can address and transform the identified issues of power. Hence, the two research questions of this dissertation are as follows:

1. What is the relationship between design and power, in the context of transitions?
2. How can design address and transform power in the context of transitions?

These two aims are not addressed in a sequential or linear fashion, since this research considers action and knowledge to be intertwined. This will be elaborated in upcoming sections

1.2 Academic Background

The research presented in this dissertation is situated on the intersection between multiple fields of scholarship. This section introduces the various strands of academic literature which this study builds upon and draws from. These are also the literatures which this study makes contributions to, in various forms.

Power

The first step for outlining the academic background is to introduce relevant conceptions on power, because the discussion that follow are guided by these conceptions. In various fields of social research, power has been conceived in various ways. One notable definition of power is “the ability of actors to mobilize resources to achieve a certain goal” (Avelino & Rotmans, 2009, p. 550). Whilst this conception regards power as belonging to individual actors, a different conception is that power is a relational phenomenon. For example, Ahlborg and Nightingale conceive of power as a relational capacity to act which is productive, contingent and situated (Ahlborg, 2017; Nightingale & Ahlborg, 2018). In this understanding, power resides in the intersubjective space between actors, and is a constructive force in the becoming of subjects, identities and social entities. Due to its contingent nature, power is not something that can be wholly controlled by any single actor, but is something that co-shapes with social dynamics. This co-shaping also takes place in relation to non-human actors, such as artefacts.

In this way, power is considered as implicit in all those ways in which social dynamics are shaped, contested, transformed and stabilized. This makes power a uniquely multifaceted phenomenon, whereby its conception as a ‘relational capacity to act’ is a useful starting point. This is because it is through action, and interpreting how this action is shaped through relations - relations to other actors, to futures, to societal structures, and to concepts - that a study of power is possible. In this manner, the framework outlined in Chapter 3 engages in a more comprehensive review of power and design, and outlines five dimensions of *agency*, *relationality*, *scale*, *temporality* and *abduction*. Whilst this dissertation produces new concepts and insights on power, also in Chapters 8 and 9, these concepts are situated in the relationship between power and design, as well as the context of energy transition. While these concepts may prove fruitful for broader debates of power, this study does not claim to show this broader relevance beyond these fields.

Design Research

As mentioned above, this research engages with various issues from the field of design research. When speaking of design research, this dissertation is inclusive of diverse forms but especially close to Research-through-Design, where design

process and research inquiry intersect, and where design methods and practices serve as a mode of scholarly inquiry (Stappers & Giaccardi, 2017). Design research is concerned with methods, approaches, and practices of designers, including their ways of problem-solving, generating creative and out-of-the-box ideas, and producing in-depth knowledge of the needs of users, clients, or other stakeholders. For this research, a broad definition of design as the practice of “devising artefacts to attain goals” (Simon, 1996, p. 144) is taken as a starting point. This is not because it is the best definition that captures everything which designers do, but because it is a fitting entry point for investigating the relationship between power and design, as it aligns with the conception of power given above. In its practical aims and goal-orientation, the design approach developed in this paper does not aim at designing products or services, but at the transformation of power in transition contexts – i.e. at contesting, transforming and stabilizing the field of emerging social dynamics.

This research engages with a variety of sub-fields of design research, including participatory design (Björgvinsson et al., 2012), ontological design (Willis, 2006), and especially design anthropology (Drazin, 2020) which will be discussed separately later. Whilst design has garnered increasing attention for its potential to address complex societal issues, there is also an emerging understanding about the challenges, barriers, and problems associated with design. As a result, there are several generative tensions across different sub-fields of design research that this dissertation engages with, and it does so through the lens of power. These key tensions are the following:

1. Industrial product design approaches have become widespread for their focus on producing tangible, practical, and useful products and services that prioritize the needs of end-users. At the same time, these approaches remain captured by universalistic ways of looking at the world (Escobar, 2020) leading to criticism about their contributions to unsustainability, socio-economic inequality and defuturing (Fry, 2009, 2020; Wizinsky, 2022). As a response, there is an increasing call for design aimed at a plurality of possible values, outcomes, and futures, which contribute to various forms of societal transformation (Akama et al., 2019; Escobar, 2018). Still, there is a risk that such endeavours remain in the domains of conceptualization, envisioning, and ideation rather than resulting in tangible action. This research aims at retaining

the power of the goal-orientation of design, without turning into domination and extractivism which marginalizes alternative ways of being. How can design work towards the realization of tangible outcomes, whilst remaining open for a plurality of perspectives, worldviews, and approaches?

2. Approaches such as human-centred design and participatory design aim to move beyond the instrumental view of people as users, and attend to a broader range of human attitudes, experiences, and capacities (Gunn et al., 2020; Van Der Bijl-Brouwer, 2016). These approaches aim to provide a greater role for people by including them in the design process using particular methods and techniques, thereby democratizing the design process (DiSalvo, 2022). It is known that participatory relations are intrinsically characterized by power (Arnstein, 1969). Yet, the role of power in the participatory engagements of design remains underemphasized (Tomasini Giannini & Mulder, 2022). Hence, the second key tension concerns the power dynamics – i.e., the balancing of interests and influence – between diverse actors in participatory engagements in design.

3. Approaches such as systemic design and transition design expand the scope of design beyond singular problems and solutions, taking a broader perspective by combining design with systems thinking and transition studies (Coops et al., 2022; Irwin et al., 2015; Jones, 2014; Van Der Bijl-Brouwer et al., 2024). Given that such larger developments are beyond the capacity of single design agents (Dorst, 2019), these fields open up to collaboration with diverse societal actors, including institutional actors and communities. Given that the relations between such actors are characterized by power relations (Avelino & Wittmayer, 2016), the issue of power should be considered here. Furthermore, transitions are characterized by open-endedness, constant change and uncertainty (Köhler et al., 2019). Hence, the third tension concerns how designers can contribute towards transitions while having limited control – because of collaborations with societal partners and future uncertainties?

Design Anthropology

As a starting point for addressing the tensions above, this dissertation builds upon existing work in the field of design anthropology, which combines methods and perspectives from design and anthropology (Gunn et al., 2020, 2020; Otto & Smith, 2013; Singh et al., 2021). If design is understood as a practice that devises means, strategies, and tools to attain particular goals, anthropology is the study of human meaning-making, symbolic production, and sociocultural practices in their local richness and specificity. The design anthropology approach adopted here holds that design sensibilities are ubiquitous to the diverse ways in which humans conduct their planning, strategizing, and moving through the world. There are various reasons why this approach is suitable for an investigation into the relationship between design and power in the context of transitions.

Unlike traditional anthropology, design anthropology is explicitly *interventionist*. Using design approaches, techniques or methods, design anthropology aims to make changes to a social context, can subsequently interpret what novel social phenomena emerge (Singh et al., 2021) as well as reflect on the moral implications of that intervention (Murphy, 2016). A design anthropology intervention can hence be considered as an act of power: it requires particular resources and is aimed at particular outcomes. In this way, design anthropology is well positioned to interpret the relationship between power and design. The interventionist approach extends also towards ethnography, as the design anthropology approach adopted here takes a participatory approach to ethnography, and actively engages in – among other things – the active construction of reciprocal relationships with collaborators. As such, this approach is well suited to address the relational aspect of power.

Finally, the concept of *emergence* is core to design anthropology and relevant for the present purpose (Gunn et al., 2020). With its focus on emerging phenomena, the focus of design anthropology lies between the present and the future, at the threshold where possibilities and potentialities are shaped and where futures act upon the present. Given that power is conceptualized here as productive, power is a key phenomenon that participates in how emerging futures are negotiated and stabilized. The same may be said for design, which is inherently a future oriented practice. Hence, this dissertation further engages with literatures from the fields of future studies – particularly in Chapter 7 – whereby it conceptualizes futures as present, plural, uncertain and emergent,

and subject to continual negotiation. As will be further outlined in Chapter 7, the intersection of intervention, emergence and power amounts to a conceptualization of *transformative action*, which is a contribution this study makes to the field of design anthropology.

Energy research, transition studies and public management studies

Finally, this dissertation engages with various other fields of social research which are not central throughout the entire dissertation, but form an integral part of particular chapters. Firstly, this study is situated in the field of energy studies, which is concerned with issues such as energy communities (Bauwens et al., 2022), energy citizenship (Wahlund & Palm, 2022), emerging smart energy innovations (Boekelo & Kloppenburg, 2023; Ford et al., 2021; Pohlmann, 2019), energy justice (Sovacool & Dworkin, 2015) and new modalities of energy exchange (Singh et al., 2017). On the one hand, this literature informs my practical action and intervention throughout the study as pertaining to the LIFE project, which will be introduced later in this chapter. On the other hand, this study builds on existing work which conceptualizes power in energy transitions (Avelino et al., 2023), and provides further concepts beyond the distinction of power-to, power-with and power-over in Chapter 9. These concepts can be fruitful for further research into the domains of energy research which are mentioned above.

Secondly, this study also draws on transition studies beyond the field of energy transitions. It does so primarily in conjunction with transition design, which is described above, but also draws from literature beyond the field of design. Aspects such as the open-endedness, uncertainty, and especially power and politics of transitions are informative here (Köhler et al., 2019). The multi-level perspective is another commonly used transition framework which this study draws from at various points (Geels, 2005). Hence, besides the notion of energy transitions, this study will also use the term societal transitions when referring to this broader field of study beyond the energy domain.

Finally, this study also engages with literatures in the field of public management, specifically in Chapter 8. In doing so, it relates discussions on power and design to discussions on public participation (Arnstein, 1969; Chilvers & Longhurst, 2016), co-production (Bovaird & Loeffler, 2012; Turnhout et al., 2020), the use of design in policy contexts (Blomkamp, 2018; Lewis et al., 2020; Van Buuren et al., 2020) and multi-actor collaborations in public contexts

(Evald et al., 2025). By drawing on these literatures, this study draws focus to the relationship between public institutions on the one hand, and citizens and communities on the other, and conceptualizes this as a power relation. Such power relations are of increasing interest for designers and design researchers, and are certainly central to the project context of the empirical part of this study. Drawing focus to this particular relationship can serve the purpose of designing new relationships between people and the state (Manzini & Staszowski, 2013).

1.3 Empirical Research Context

As mentioned, this research is grounded in a multidisciplinary local energy transition project in Amsterdam Southeast, the Local Inclusive Future Energy (LIFE) project. The LIFE project took place between 2021 and 2025, and was funded by the MOOI subsidy of the Rijksdienst voor Ondernemend Nederland. The aims of the project pertained to joint social and technological challenges in the local energy transition. The first aim of the LIFE project was to develop smart solutions to alleviate the local congestion of the electricity grid, which were initially framed as a ‘smart energy platform’. In the LIFE project proposal, the project aim was formulated as follows:

“The key result of this project is a district-scale ICT smart energy management platform (LIFE) connected to a wide variety of energy devices/assets. This platform will strive for maximum societal acceptability by developing a technical and legal framework for local communities and stakeholders to access the benefits of flexibility. The platform will monitor and control multiple devices, simulate the effects of control measures using a Digital Twin, and optimize flexibility with an intelligent algorithm while integrating with various energy markets. The platform will improve self-reliance on local clean energy, create financial value for flexibility, and engage locals in the process.”
- *LIFE project proposal*

Hence, the so-called ‘LIFE platform’ would enable the interconnection and interoperation of large energy assets in the area – assets such as battery

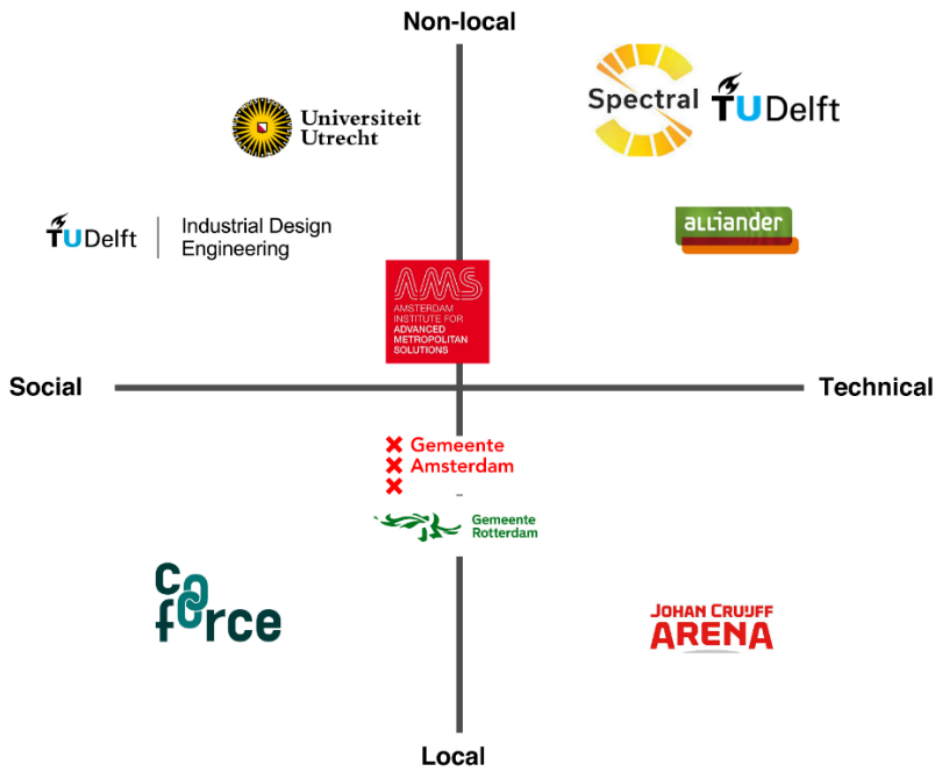


Figure 1.1: Partners of the LIFE project consortium, represented based on their disciplinary orientation and the extent to which their activities are situated in the local project context.

storage and heat-cold storage. Owners of these assets would derive certain benefits from this platform by being able to utilize their assets in novel ways. Besides this technical aim, the LIFE platform also had a social aim. In particular, the social aim was to investigate how the LIFE platform could be designed to be socially inclusive, and provide benefits for local households as well as large asset owners. Whereas the envisioned technological outcome was described extensively in the project proposal, the social aim was not developed in-depth. Rather, it consisted in making the benefits of the LIFE platform available to a broad range of local households, so that they could realize cost savings and gain insight in their energy usage.

The LIFE project consortium was composed of numerous partners, including universities, the municipality, companies and local stakeholders. The partners of the consortium are represented in Figure 1.1. Throughout the project, the partners roughly divided themselves into 'technical partners' who contributed to the technical aims of the project, and the 'social partners' who contributed to the social aims of the project. Over the years, various work structures were implemented for the consortium, and numerous workshop and working sessions were held to conduct collective investigations into the project aims and activities. At various points in the dissertation I will report on the dynamics that took place between the consortium partners.

The LIFE project was situated in a defined area in Amsterdam Southeast, encompassing the local city districts of ArenAPoort, Amsterdamse Poort, and Venserpolder. The first two of these are composed of offices, event venues, shops, including the Johan Cruijff ArenA, the football stadium which is also the lead partner of the LIFE project, and shown in Figure 1.3. The Johan Cruijff ArenA manages a large electricity storage battery to power their events with renewable energy - the total storage capacity amounts to 8,6 MWh. This battery was the primary asset used for experimentation in the LIFE project.

In contrast to the other areas, Venserpolder is a residential neighbourhood which faces several interconnected socio-economic challenges, including energy poverty, a lack of social cohesion and the lack of a strong local economy (Gemeente Amsterdam, 2020). Venserpolder has a population of around 8500 residents who live in 4500 households (AlleCijfers.nl, 2025), spread across 17 large apartment buildings, each with several hundred households, which are shown on Figure 1.2. Most of the apartment buildings are managed by homeowners' associations (VvE's) which are composed of mixed social housing and private homeownership (Gemeente Amsterdam, 2020). The VvE's and the social housing corporations play an important role in the local energy transition. Furthermore, like the rest of Amsterdam Southeast, Venserpolder is home to an immense diversity of nationalities and sociocultural backgrounds - around 70% of residents in this area have a non-Western migration background (AlleCijfers.nl, 2025). There are several active community centers in Venserpolder where residents organize local activities. Several photos of Venserpolder can be seen in Figure 1.3.

As partners in the LIFE project consortium, I and my colleagues were part of the social partners, and tasked with facilitating a participatory process with

Venserpolder residents. We also played a role in facilitating the internal collaborative process of the consortium. In particular, we investigated how the social and technical sides of the project could become more interconnected, which was a recurring question and challenge within the LIFE project. These practical aims and tasks became the locus of our research, and form the basis of 4 years of ethnographic fieldwork on which this dissertation is based. In the next section I will elaborate how this research was conducted.



Figure 1.2: Map of Venserpolder which shows the different apartment blocks, as well as the housing corporations and the proportion of homes they own in each block. Source: Gemeente Amsterdam (2020)



Figure 1.3: Several photos of Venserpolder (top and middle) and the Johan Cruyff ArenaA (bottom)

1.3.1 Dissertation structure

Before proceeding with the core contents of the study, this section outlines how the dissertation is structured. First of all, it is important to emphasize that this is a paper-based dissertation. This means that the core chapters consist of writings that have been, or are in the process of being, published in an academic journal or conference proceedings. Given the interdisciplinary nature of this research, these publications are located with outlets and journals with diverse disciplinary orientations, epistemic norms, and requirements. As a result, there is a distinct heterogeneity between the diverse core chapters and sections, in terms of chapter structure, theoretical orientation, and writing style. At the same time, there is also a significant overlap between the different core chapters and sections. This is because each publication is required to have, for example, a methods section, a description of the empirical context, and a discussion of relevant background literature. Despite the fact that the different chapters have different emphases, there is of course an overlap between them in this regard.

A consequence is that this dissertation does not have a linear structure of the kind where one starts with the literature review, then develops a methodology, executes the methodology to obtain results, and then discusses the implications of these results, in a sequential manner. Rather, each chapter has its own small literature review, method description, results, and discussions. As such, each chapter or section is a snapshot of how I understood the issue, and our approach at the time of writing that chapter. Hence, reading the chapters in chronological order of writing – which is, with some exceptions, how they are presented in this dissertation – provides insight into the unfolding and emerging understanding of the research project. As a result, the different chapters meander in different conceptual directions, for example by discussing design ethics, design fictions and future making in Chapters 5, 6 and 7. With the exception of Chapter 3, which is a purely conceptual paper written at the end, it is only in Chapters 8 and 9 that power comes explicitly to the forefront. This is because power is a tricky, hard-to-grasp phenomenon that is implicit in many other practices, concepts, and phenomena. It was only by investigating the subject matter from diverse angles, perspectives, and frameworks, by slowly working through the tensions that were encountered, and by having a better overview by the end of the study, that an understanding of the relationship between design and power in the context of transitions could emerge towards the end. Notably, most of the papers were – or are being – published as part of

special issues, where guest editors of a journal requested input on a specific topic. This shows how even the publication process has been approached in a relational manner.

For these reasons – as well as for the sake of time – I have decided to retain the original structure of these publications, rather than rewriting them for the sake of linear uniformity. After all, this kind of research is characterized by non-linearity, messiness, and heterogeneity – not by a logical linear sequence of steps, which can be carefully planned and executed according to that plan. I hope that this structure can be informative for the reader to understand what it means to conduct interdisciplinary research and publish in journals with diverse disciplinary orientations. At the same time, this dissertation does of course establish coherence between the diverse publications. This is done with the introductory and concluding chapters, as well as Chapter 3, which is an important chapter. Despite it being the first of the core chapters, it was written at the very end of the research, and synthesizes the insights from all the other chapters in a five-dimensional framework which describes the relationship between power, design, and transitions. Hence, this chapter can be considered as the answer to the first research question.

Besides answering the first research question, the framework in Chapter 3 performs another role in establishing the coherence of this dissertation. At the beginning of each core chapter, an introductory section is added which was not included in any of the publications. Besides introducing the contents of the chapter, these sections serve the purpose of applying the framework from Chapter 3 to the empirical findings which are reported in that chapter. Hence, whilst the various core chapters mobilize diverse theoretical concepts and perspectives, their introductory sections serve to reinterpret their contents in terms of power, through the lens of the framework introduced in Chapter 3. The introductory sections serve to operationalize the framework in Chapter 3, to explore how it may be formulated into a coherent design approach. Then, the concluding chapter provides a final synthesis of these sections to answer also the second research question. The dissertation structure is further shown in Table 1.1.

Several comments should also be made about the writing style of this dissertation. Given the fact that the positionality of the researcher is made explicit in this study, that the nature of the power phenomenon makes it hard-to-grasp in traditional research methods, and the interdisciplinary nature of this

research, the writings take the form of organically flowing narratives, rather than ordered mechanisms of knowledge production. The reasons for this are further elaborated in Chapter 2. I believe this form of writing honors the goal of

centering the human experience, to which narratives are more natural than tables and logical categorizations. This style of writing is synthetic as well as analytic: rather than organizing entities in distinct analytical categories, it aims to acknowledge the relationships between such seemingly separate entities. Using the abductive form of reasoning, which will be discussed in the next section, knowledge is created by exploring new conceptual interconnections and generalizations. The intention is for this to result in writing

Table 1.1: Overview of dissertation structure

Part	Chapter	Time of writing	Publication status
	Chapter 1: Introduction	Late 2025	Unpublished
	Chapter 2: Research Design	Mid 2025	Unpublished
Part 1: Research Design and Framework	Chapter 3: The Relationship between Design, Power and Transitions A Sensitizing Framework	Late 2025	Under revision for publication in <i>Designing</i>
Part 2: The Frictions and Ethics of Intervention	Chapter 4: Local Frictions in the Energy Transition: Design Anthropology for the Emergence of Energy Communities	2023	Published as a conference paper as part of the <i>Ethnographic Praxis in Industry Conference 2023</i> .
	Chapter 5: Design Anthropology for Ethics of Care and Emergence: Reflections from an Energy Transition Project	2024	Published as a conference paper as part of the <i>Design Research Society Conference 2024</i> .
Part 3: Negotiating Futures and Fictions	Chapter 6: Towards Design Fiction for Human-Centered Energy Transitions: Imagining Infrastructures and Worldbuilding	2024	Published as a journal paper in <i>Pages of Art and Design</i> as part of the special issue on <i>Humanizing Energy</i>
	Chapter 7: Design Anthropology and Ontological Future Making: Transformative Action for the Emergence of Shared Futures	2024-2025	Published as a journal paper in <i>SheJi: The Journal of Design, Economics, and Innovation</i> as part of the special issue on <i>Future Making</i>
Part 4: Transforming Power Relations in the Energy Transition	Chapter 8: Design Anthropology for Transforming Power Relations in Societal Transitions	2025	Under revision for publication in <i>Public Management Review</i> as part of the special issue on <i>Design for Societal Transformations</i>
	Chapter 9: Conceptualizing Power Relations in Local Energy Transitions: A Design Anthropology Approach in Amsterdam Southeast	Late 2025	Under preparation for submission to <i>Energy Research and Social Science</i>
	Chapter 10: Conclusion	Late 2025	Unpublished

that retains a logical structure and coherence, but which has a natural narrative flow that represents the real process of how research is done. Rather than a linear sequence of method-results-discussion, this process is characterized by side-paths and dead-ends, by intuitive insights and surprising connections, as well as by failures, barriers and constraints. Finally, note that while the word 'I' is used in unpublished chapters, the published chapters will often use 'we' as multiple authors were involved in writing those chapters.

Given the societal orientation of this research, and the aspiration for significance beyond academic research, I emphasize that the contents of this dissertation do not exhaustively represent all the research activities that were done. A significant portion of the effort was dedicated to collaboration with stakeholders in Amsterdam Southeast, specifically by supporting the emergence of an energy community in Venserpolder. In this dissertation, much of this work remains implicit. Some outputs which further represent these efforts can be found in the appendix, which contains a booklet which summarizes our co-creative endeavors in Venserpolder for local residents and a flyer with recommendations for societal actors involved in local energy transition projects. These appendices serve to further position this research in a broader conversation about the role of universities and researchers to engage with societal challenges.

1.3.2 Dissertation overview

To conclude this introduction, this section provides a succinct chapter-by-chapter overview of the dissertation. The dissertation consists of 10 chapters, most of which consist of independent publications. Except the introduction and conclusion, the 8 core chapters are further divided into 4 parts, which provide a higher-level thematic division.

After Chapter 1 which is the *Introduction*, Part 2 is named *Research Design and Framework*. In this part, Chapter 2 is the *Research Design* which describes core ontological, epistemological and methodological commitments, principles and aspects of this study. As described, the positionality of the researcher is explicated in this study, which brings particular implications for how the research is conducted. This study adopts a relational ontology, whereby the relations between the researcher and other entities - including

humans, institutions, societal structures, and concepts – become subject to investigation, as it pertains to how power is implicit in these relations.

Chapter 3, *The Relationship between Design, Power and Transitions: A Framework for Design in the 21st Century*, provides an elaborate conceptual review of the relationship between design and power in the context of transitions, and organizes insights thematically under five dimensions. These five dimensions of agency, relationality, temporality, scale and abduction, constitute a framework for design in the 21st century. In this way, Chapter 3 synthesizes many insights from the rest of the dissertation. Chapter 3 was written after the other core chapters, and is as of late 2025 under review as stand-alone article for the Designing journal.

Part 2 is named *The Frictions and Ethics of Intervention*, as it comprises chapters 4 and 5 which describe the early findings, experiences and reflections of our interventions in Venserpolder and in the LIFE project. Chapter 4, *Local Frictions In The Energy Transition: Design Anthropology For The Emergence Of Energy Communities*, provides detailed ethnographic findings of our early visits to the Venserpolder neighbourhood. Since this chapter was published as part of the proceedings of the Ethnographic Praxis In Industry Conference (EPIC) 2023, it furthermore describes barriers and pathways for ethnographers who work in the context of energy transitions.

Chapter 5, *Design anthropology for ethics of care and emergence: Reflections from an energy transition project*, describes how we mobilized our ethnographic findings from Chapter 3 to make an effort to reframe the activities of the LIFE project. It describes how these efforts were constrained by prenegotiated project structures and deliverables. It does so through the lens of design ethics, as this article was part of the design ethics track of the DRS2024 conference. This chapter positions design anthropology as a way of inquiring into the ethics that are implicit in everyday interactions, conversations and activities which make up a design process, bringing attention to aspects of care and emergence.

Part 3 is named *Negotiating Futures and Fictions*, as it comprises chapters 6 and 7 which grapple with the temporal dimension of design and power, as well as with the nature of future visions which are mobilized throughout the LIFE project. Chapter 6, *Towards Design Fiction for Human-Centered Energy Transitions: Imagining Infrastructures and Worldbuilding*, is a short conceptual article which positions design fiction as a promising direction

for fostering human-centered energy transitions. It takes energy infrastructures as a starting point for worldbuilding, and describes seven emerging energy worlds which can be mobilized in particular sociopolitical contexts to support human-centered energy transitions. Chapter 6 was published in the journal *Pages on Arts and Design*, as part of their special issue *Humanizing Energy*.

Chapter 7, *Design Anthropology and Ontological Future Making: Transformative Action for the Emergence of Shared Futures*, is a large chapter with extensive theoretical and empirical work on the intersection between design anthropology, futures studies and ontological design. It positions futures as plural, emergent and political, and positions design anthropology as a mode of inquiry into futures in the context where it emerges. The chapter furthermore positions an original approach named *Ontological Future Making*, which investigates how actors are ontologically conditioned by their future orientations, and aims to transform these ontological conditions so that shared futures becomes possible. This approach is illustrated with the empirical reporting, which describes tensions between LIFE project partners and with the residents, as well as our efforts transform these tensions. It further describes how these efforts resulted in the initiative to establish a local energy community, and how this is not merely a desirable outcome, but actually a precondition for further shared futures to emerge. Based on these findings, this article recommends to embrace more direct, political and relational forms of future making. Chapter 7 was published in *SheJi: The Journal of Design, Economics, and Innovation*, as part of their special issue on *Future Making*.

Part 4 is named *Transforming Power Relations in the Local Energy Transition*, as chapters 8 and 9 engage with the concept of power directly. Chapter 8, *Design Anthropology for Transforming Power Relations in Societal Transitions*, provides a conceptual review that overlaps with chapter 3, and reports on three power relations which were encountered, intervened, and transformed as part of our research. These relations pertain to the lack of collaboration within the LIFE consortium, to the engagement of residents in a co-creation process, and to the deficient relationship between the municipality and the local community. The transformations achieved are characterized as highly local and specific, yet significant to the extent that they contribute to greater transition pathways. The paper further describes various implications for designers who are active in transitions, where designers as positioned as brokers of power. As of late 2025, Chapter 8 is under review for publication in

Public Management Review, as part of a special issue on Design for Societal Transformations.

The final core chapter 9, *Conceptualizing Power Relations in Local Energy Transitions: A Design Anthropology Approach in Amsterdam Southeast*, combines power theory with anthropological theory on reciprocity. The chapter further provides an extensive empirical reporting, focusing on the relations between Venserpolder residents and five other actors: researchers, large asset owners, other neighbourhood actors, the municipality, and the grid operator. It describes how these relations existed, emerged and were envisioned, using the concepts of power and reciprocity. Based on these results, it identifies several anomalous instances of relations which could not be captured with the existing concepts. Informed by these anomalies, the chapter positions a new framework for power relations, informed by reciprocities, which provides conceptual handles beyond the common distinction of power-to, power-with and power-over. As of late 2025, Chapter 9 is under preparation for submission as a standalone article to the journal *Energy Research & Social Science*.

Chapter 10, the *Conclusion*, provides a comprehensive chapter-by-chapter summary of the dissertation as well as an overview of the key literature contributions made. It reflects on the limitations of the study and directions for future work, and also provides an extensive personal reflection on the entire study, which focuses on the interventionist and societal dimension.

Appendices A, B and C contain various further outputs which were part of this study, but were not captured by the core chapters. Notably, Appendix A contains a booklet which we designed to report on the process of establishing the energy community in Venserpolder. This booklet was written with the local residents as an intended audience, although other audiences – especially those working in local energy transition projects – may also find it insightful. Appendix B contains a flyer which was published alongside the booklet in Appendix A, and provides concrete recommendations for those working in local energy transitions.

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PART I

Research Design and Framework

This part describes the setup of the study. Firstly the research design is described, which is founded on a situated and transdisciplinary approach, on a relational and action-based ontology, and on ethnographic and co-creation methods. Secondly, this part positions a conceptual framework that characterizes the relationship between design and power, in the context of transitions. This framework is the primary outcome of this study, and is referred to throughout the rest of the dissertation.



2

RESEARCH DESIGN

This chapter describes the research design of this study. It describes how the research is situated between different disciplines, and adopts a transdisciplinary approach. The explicit positionality of the designer is taken as the starting point for this approach, meaning that the scope of the research is defined by the activities which the researcher is a part of, and by the relations and collaboration within which they are embedded. The ontological commitments of this study are described accordingly as relational and action-based. Finally, the chapter describes how ethnography formed the methodological basis for the research.

2.1 Transdisciplinarity and Situatedness

To characterize its positioning between diverse academic disciplines, including design research, design anthropology, energy studies, transition research and power theories, as well as the collaboration with societal partners, this study adopts the term transdisciplinarity. Transdisciplinary research is conducted in close collaboration with non-academic societal partners (Robinson, 2008), and aims at producing integral knowledge that sits at the science-society interface (Seidl et al., 2013). Hence, whilst this study draws from various academic fields, the result is a novel and original approach, that is most of all directly informed by this particular study and its context. Through the engagement with diverse literatures, the broader relevance of this approach is described in relation to design research in particular.

As a researcher, I was fundamentally situated within the multi-actor collaboration of the LIFE project, meaning that my own positionality and relations to the context became subject to investigation. In other words, the research is conducted from a fundamentally situated and partial perspective. The research investigations, including the formulation of research questions, topics, and approach, emerge from and are intrinsically shaped and constrained by my social relations and collaborations with partners in the LIFE project. This has several implications. First of all, the scope of activities I could participate in to conduct research and gather data was intrinsically constrained by the nature of my collaborations, which were, to a large extent, pre-negotiated and outside my control. Rather than abstracting away from these contextual constraints, this research aims to make them explicit and frame them in terms of power. As will become clear, there is a distinct tension between these constraints and epistemic academic norms around how data should be systematically collected. The empirical observations made during the fieldwork are inherently partial, and the research activities conducted – in their structure and mode of gathering data – are not only organized according to academic principles, but especially according to the emergent needs of the context.

Importantly, these emergent needs are characterized of power. This means that, in addition to being a phenomenon of interest, power also constrains the scope of the research. For example, in the organization of co-creation workshops, there was a continual tension between prioritizing issues of interest to the stakeholders, and raising issues of our own academic interest. In this way, the powers that shape my own academic role and activities also

come to the forefront, in the form of the academic institutions that enact their agendas. For other stakeholders – in particular citizens – such research agendas may be experienced as extractive. It is in this way that the issue of power is not an objective phenomenon to be studied, but intrinsic to the research design. In the conducting of research activities, the agency of the researcher enters into relation with the agency of collaborators and becomes entangled with diverse structural, societal, and systemic influences. These aspects call for particular considerations with respect to the ontological and epistemological commitments of this research, which will be discussed next.

2.2 Ontology and Epistemology

This section discusses ontological and epistemological assumptions and considerations that shape the research. ‘Ontological’ here refers to the entities which are considered to be part of the world, whereas ‘epistemological’ refers to the manner in which something can be known of these entities (Grix, 2002). Whilst some of these considerations are further discussed in later chapters, especially chapter 6, this section provides an overview of the key aspects. The significance of this section may differ according to the interests and preferences of the reader.

2.2.1 Relational and Ontological Design

First of all, I draw from the ontological design principle that diverse forms of action are all ‘design’, insofar as these actions shape the environment and the world, and that the world subsequently acts back upon the agent, who is then designed by it (Willis, 2006). Such action can be goal-oriented, as in Herbert Simon’s definition which was given earlier, but it does not have to be – this tension is further unpacked in chapter 2, under the dimension of agency. What matters for the present purpose is that design is something that transforms the subject as well as the object of design – i.e., the designer. Hence, the being of actors is characterized by how they design, by what they *do*. As a result, this research attends to what actors *do*, rather than what they think or believe. Hence, this research is not so much interested in worldviews: rather, it is interested in how values, purposes, and worlds are *enacted*. Through their mode of action, actors can be understood to enact different ways of being in the world, or in other words, they design different ontologies (Escobar, 2018). This

applies to the LIFE project, where diverse actors and stakeholders enact different worlds that may be congruent, divergent, or conflicting. These ways of being may be further entangled with, and shaped by, diverse non-human, sociotechnical actors, which co-shape social dynamics - consider funding requirements, project management structures, formal distribution of resources, and larger systemic factors, including government policies and market conditions. The manner in which human and non-human actors negotiate the becoming of worlds can be understood as ontological politics (Mol, 1999), which is how we can understand power at its most fundamental level: as the negotiation, (de)stabilization and transformation of diverse worlds.

Furthermore, this research adopts a relational view towards ontology. One system of thought that advances a relational ontology is new materialism, of which we here review relevant aspects. New materialism dispenses with dualist distinctions such as mind/matter, culture/nature, and human/non-human (Fox & Alldred, 2015), and instead investigates relationships that cut across such distinctive boundaries. The focus of new materialist studies is on these sets of loosely coherent, entangled relations among heterogeneous entities, which are signified by the concept of 'assemblage' (DeLanda, 2019). An assemblage is not a static thing, but has its own momentum and agency, and is continually in a state of change and becoming. In this dissertation, several entities, such as the 'LIFE platform' and 'energy community', are best understood as emergent assemblages rather than independent objects. Another interesting and useful notion, which is provided by Fox and Alldred, is what they call the 'research-assemblage' (Fox & Alldred, 2015). This term refers to a collection of diverse research methodologies and philosophies, techniques of data collection and analysis, and the systems of academic publishing, as well as journals and reviewers. Making the research-assemblage explicit has important implications for how 'research participants' should be viewed:

"Human accounts can no longer be accorded validity on the basis of their 'authenticity', and methods such as interviews must be treated not as means to obtain subjective representations of the world but as evidence of how respondents are situated within [research] assemblages." (Fox & Alldred, 2015, p. 409)

In other words, people's opinions, as derived from co-creation workshops, interviews, or other conversations, cannot be viewed as independent - rather, they are produced by the relationship between the person and the research assemblage. Again, this relationship is characterised by power in the sense that it enables and constrains the range of attitudes that people on either side of the relationship can adopt. This will become clearer in the core chapters of this dissertation, which describe how ethnographic encounters with residents in Venserpolder were likewise shaped by the operations of larger research-assemblages.

This relational ontology has important implications for design research. When it comes to human-centred design, for example, it means that the 'human' cannot be investigated independently from the 'design' for which it is being mobilized - if the design is tailored towards the human, the human is also tailored towards the design. The starting point for any investigation into relations is always one's own positionality - hence, this research is conducted first and foremost through my own relationships to the project context and the diverse entities that populate it.

2.2.2 The Relationship Between Action and Knowledge

Since, as we have established, issues of power are internal to the research design, these issues become inherently difficult to identify and articulate. Not only because of the complex interrelation between knowledge and power, as will be elaborated in Chapter 2, but also because power is implicit in the enactment of design and research activities. An important question hence becomes, how higher-order knowledge can be produced about power in design contexts, from the richly situated research and design activities where the design researcher - and their perceptions - are themselves shaped by such relations.

To start, we discuss the approach of Research-through-Design, which explores the relationship between action and knowledge in a particular way (Stappers & Giaccardi, 2017). Stappers and Giaccardi characterize "Research" as an activity that aims to produce general knowledge and abstract theory, whilst "Design" aims to realize specific solutions in situated contexts. They position "Research-through-Design" as an approach that generates knowledge by reflecting on concrete design activities - such as iterative prototyping. From these concrete activities, researchers can interpret the general steps that were

carried out, and produce abstract knowledge about design activities by formulating these general steps. Importantly, Stappers and Giaccardi describe that a defining aspect of knowledge is 'that it has a use in guiding someone's future actions in the world' (Stappers & Giaccardi, 2017). Hence, knowledge is produced from action, and knowledge also produces further action.

In this research, I adopt this notion, with the connotation that this research is concerned with a somewhat different type of design than Stappers & Giaccardi, for whom material prototypes and artefacts have a central role. How should a Research-through-Design approach look like in contexts of social and transition design? As mentioned, this research considers the transition context of design activities in its full specificity, especially in how it constrains the enactment of research activities, techniques, and methods. In such a context, design activities are constituted by multi-stakeholder negotiations and engagement in social relations, rather than the construction of material artefacts and prototypes. I suggest that the distinction between tacit and explicit knowledge can help understand the implications of this (Stappers & Giaccardi, 2017). In the case of a designer devising material artefacts, the designer has tacit knowledge expressed in the construction of the artefact. This tacit, implicit knowledge can be derived from previous experience or simply be intuitive, and is expressed in the final design result, rather than through language (Stappers & Giaccardi, 2017).

In the current study, tacit knowledge consists in the manner of conducting everyday negotiations, navigating complex multi-stakeholder interests and power dynamics, and building social relationships with collaborators. Some of this tacit knowledge may be rendered explicit during the study, but as with artefacts and prototypes, some of it - perhaps most of it - is expressed only through the end-result. The issue is that the end-result is a sociotechnical assemblage, a small part of a greater societal transition, rather than a physical object. This raises a question, as unlike objects, societal transitions do not unambiguously present themselves - and their properties - to an observer. How can tacit knowledge express itself in the outcomes of transition design? This in itself requires another design step, namely to articulate the qualities of the sociotechnical design activities in a tangible - e.g., visual - form. The problem with this is that, for an outsider, the link between the actual context and its designed representation is uncertain: does the designed appearance reflect the state of the real world? This is a problem that does not emerge in the

construction of physical objects. From the perspective of this research, the legitimacy of designerly work in transition contexts consists in the quality of the social relations that were formed and strengthened, and the extent to which power dynamics were transformed, but how can such qualities be made intelligible? How can explicit knowledge about these social relations and their power dynamics be articulated? Whilst this research engages with these issues, a satisfactory answer might require a separate doctoral research altogether.

Much of the writing was done whilst the project was still ongoing: the writing represents attempts to report on tacit and implicit dynamics of power, whilst still embedded within these dynamics. For this reason, the topic of power is discussed only implicitly in earlier chapters, which use mostly different concepts. Since power is a highly abstract concept, articulation of explicit knowledge was better possible at the end of the research, when more distance was created between the researcher and the design activities. The type of logical reasoning involved in moving between concrete observations and abstract concepts will be further discussed in the next section.

2.2.3 Abduction, Abstraction, and Agency

Moving between the particularity of empirical observations and generalized theoretical findings requires specific epistemic operations. Most common are the use of deductive and inductive reasoning to compare empirical findings with existing theory. There are important limitations to inductive and deductive reasoning, however, especially for the type of social research conducted in this dissertation. Instead, the third option of abductive reasoning - which has been commonly discussed in design research - is more fitting (Kolko, 2010; Koskela et al., 2018). This section describes the particular mode of abductive reasoning adopted in this research.

First of all, inductive reasoning functions by making particular observations of a phenomenon of interest, and inferring general laws about the overall behavior of the phenomenon (Tavory & Timmermans, 2014). This is the type of reasoning mobilized in the natural sciences. In social research, approaches like grounded theory adopt this logic, aiming to be informed by the empirical data relatively free of theoretical presuppositions, and constructing novel theory based purely on empirical observations (Tavory & Timmermans, 2014). In practice, however, this is difficult - as Tavory and Timmermans argue, inductive approaches often stay too close to the data, leading to little in terms

of novel theoretical insights (Tavory & Timmermans, 2014). Most importantly, the complexity of social contexts means that obtaining enough observations under stable conditions is challenging, if not impossible (Tavory & Timmermans, 2014). Since for this research only a single context is taken as the research field, and the context-specific elements are considered as informative rather than ephemeral, inductive reasoning is unfit. The opposite of inductive reasoning is deductive reasoning. Deductive reasoning starts with an broadly accepted theoretical framework – typically from established thinkers in social theory – and aims to ‘test’ theoretical principles against empirical phenomena (Tavory & Timmermans, 2014). Since the social world is fluid and subject to interpretation, however, there is a risk that any empirical phenomena are simply interpreted through the theoretical lens adopted, leading to the confirmation – or at most, nuancing – of existing ‘grand’ theories, rather than production of novel insights (Tavory & Timmermans, 2014).

To address these challenges, abductive reasoning provides a third alternative. Abductive reasoning relies on incomplete and partial observations to infer plausible explanations, which might or might not be ‘true’. Originally, abductive reasoning was considered by the American pragmatist C.S. Peirce as a mode of hypothesis generation, informed by flashes of intuitive insight (Peirce, 1955, p. 150). Thus, abductive reasoning sacrifices generalizability for novelty and creativity. Tavory and Timmermans argue that, whilst inductive and deductive reasoning often lead to rigid research designs that yield little novelty, abduction makes use of moments of surprise to generate exactly such novelty (Tavory & Timmermans, 2014). Unlike Peirce, their approach aims to unpack the black box of ‘intuitive insight’, which should not be considered as something mysterious. Rather, insight emerges from the intensive engagement with both theory and data, going back-and-forth between them. In the context of this research, which is highly action-based, this insight also emerges from the iterative back-and-forth between action and reflection, stepping into and outside of the empirical context (Schön, 2013).

Another useful way to think about abduction is provided by Snowden, who describes abduction as “the use of *abstraction* to allow novel connections to be made between apparently unconnected things” (Snowden, 2024, p. 51). I argue that this definition is especially useful for the current purpose. The empirical phenomena of this study might well be readily explainable by existing theory, if taken in isolation. The novelty rather resides in the drawing of

interconnections and synthesizing these diverse theoretical fields. In the present study, the purpose of abduction is to show the full richness of the social context under study, but not by sticking to the empirical details. Rather, the purpose is to show how seemingly disconnected phenomena – as predicted by theory – co-exist and co-act in an assemblage, in the empirical field. Understood in this way, abduction does not have to be a seemingly random, uncontrollable process that happens by accident. Rather, abduction can be an intentional act. Many of the empirical phenomena encountered in this study can be explained from a variety of theoretical perspectives, each of which seems equally valid. The question of which theoretical framing to adopt then becomes a matter of choice for the researcher. This choice can be informed by personal preference or commitment to a particular field, as is often the case. Or, it can be informed by what Stappers & Giaccardi describe as a key aspect of knowledge: that it should have a use in guiding action in the world. Hence, when inferring abstract concepts from particular phenomena, the question becomes: what kind of action would we like inspire with our theory?

This question is analogous to what Snowden calls the “problem of abduction” (Snowden, 2024, p. 51): how can we decide which intuitive insight is more valid than another? He proposes to make use of the “wisdom of crowds” – i.e., to test our insights with the sensibilities of other people. In this phrase, “wisdom” can be understood to be inclusive of wisdom about the power relations and dynamics that are internal to crowds. In an academic context, these people involve the scientific community, i.e. a community of inquiry as described by the American pragmatists (Peirce, 1955). In a transdisciplinary context, however, this community is also constituted by collaborators in society. Whilst the validity of theoretical abstraction should be tested within an academic community, the purpose of the societal action our theory serves should be determined in close collaboration with partners in transdisciplinary research. In this way, academic knowledge production can avoid becoming an activity that serves only the interests of the ivory tower. It is in this way that this study aims to bridge the gap between design and research, between action and knowledge, between the particular and the general.

2.3 Methodology

This section briefly discusses the overarching methodological approach which was used to conduct the study. Note that this dissertation does not make any contributions in terms of developing specific novel methods – rather, its contribution consists in developing an overarching approach within which specific methods can be mobilized. This approach – in terms of addressing and transforming power – is discussed at various other points in this dissertation. This section only refers to pre-existing methods that are adopted.

Most importantly, the study makes use of ethnography as a core method (Brewer, 2000). Ethnography is well suited for the triple purpose of 1) understanding how power co-shaped with the design process, 2) enabling informal intervention to challenge and transform power, and 3) to build relations and collaborations required for the transdisciplinary component of this research. As an unstructured method, ethnography is suitable for gathering different forms of data, for understanding the experiences of diverse partners and collaborators, and is flexible enough to incorporate various other design methods and techniques (Müller, 2020; Pink et al., 2022). The ethnographic approach was interventionist and participatory, which I characterize in this dissertation with the design anthropology concept of intervention. This intervention takes various forms, including simply attending project meetings and discussions, as well as organizing co-creation workshops. With the concept of power, this dissertation develops an overarching language for understanding such intervention and participation. Importantly, our participatory ethnographic interventions can be considered themselves as forms of power exercise.

Ethnography is used as a way of immersing oneself in social contexts of interest, so that such contexts may be understood and studied ‘from the inside’. Our involvement in the LIFE project was of this character, as we were ‘insiders’ within the project consortium, whilst studying the dynamics of this consortium at the same time. It is important to note here, that we were not ‘insiders’ in the neighborhood – I did not find it appropriate to position ourselves as such. Rather, in relation to the neighborhood we were institutional collaborators. It is for this reason that ethnography was not used to extensively study the cultures of this neighborhood – rather, it was used to investigate the power relations between the neighborhood and external forces, actors and structures, while at the same time intervening within those relations. An intrinsic aspect of ethnography is the aim of building trusted, reciprocal relationships and collaborations with others, and as has become clear at this point relationality is a recurring theme

throughout this dissertation. We gathered unstructured data, and considered all activities, artefacts and documentations of the LIFE project as potential data. Throughout the research we conducted continual participant observations (DeWalt & DeWalt, 2011), through note-taking and interpreting those notes. This was done in a collaborative fashion, as we often conducted research activities with multiple researchers, whereby observations and interpretations were shared and discussed among the team. The composition of our research team varied throughout the study.

Another crucial component of our ethnographic approach was reflexivity. As already mentioned before, the positionality and situatedness of the researcher are explicated in this study, as this is required to understand the power relations and dynamics which entangle the researcher. A reflexive practice also serves to understand the consequences of our interventions and to what extent the outcomes of our own actions align with our intentions. Hence, we also use collaborative autoethnographic reflections as part of our methodological toolkit (Roy & Uekusa, 2020).

Finally, as part of the ethnographic approach, we conducted numerous co-creation workshops throughout the research. These workshops served the triple purpose of 1) facilitating a process of collective sensemaking among the relevant stakeholders of our project, 2) gathering data for research purposes, and 3) transforming power dynamics prevalent in the context. Whilst a variety of techniques were used to organize the workshops, they are not discussed in great detail in this dissertation. This is because the research aims and questions were not served by the systematic and controlled deployment of design methods and techniques. Instead, this study focuses on the greater design process within which these workshops were embedded, and on the tensions and transformations which they were a part of. In terms of content, the workshops were mostly tailored towards the interests of our collaborators, to discuss issues and concerns of their interest, and to further the initiative of establishing an energy community in Venserpolder.

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3

DESIGN, POWER, AND TRANSITIONS

A Sensitizing Framework

This article¹ explores the relationship between design and power in the context of transitions by positioning a framework of five dimensions: agency, relationality, scale, temporality and abduction. Thereby, it aims to open up new ways of doing and thinking design in contexts of societal transitions, complex systems and polycrisis. Power is positioned as a multifaceted phenomenon that is implicit in many aspects of design, and that shapes design process and outcomes by enabling and constraining the agency of design actors and participants. Each of the five dimensions provides a different conceptual angle to understand the relationship between design and power in the context of transitions, and is based on empirical experiences as well as theoretical synthesis. The article concludes by offering several pointers towards thinking and doing transition-design-as-power-work, and provides a set of reflexive questions for designers.

¹ This chapter is under review for publication in *Designing*.

3.1 Introduction

There is an increasing call for novel design approaches that can address the interconnected social, economic, and environmental global crises of the 21st century, as there is a sense that traditional problem-solving methods are inadequate (Avelino et al., 2024; Henig and Knight, 2023; Loorbach, 2022). Approaches like transition design and systemic design have emerged in response to this need, and advocate for design to contribute to causes like sustainability and justice (Ceschin and Gaziulusoy, 2016; Coops et al., 2022) . These causes are inherently politically contested, however, and their realization requires complex multi-actor negotiations, a careful balancing of conflicting values, and a modest yet deliberate harnessing of agency. Whilst various design approaches, such as participatory design and infrastructuring, address such issues (Björgvinsson et al., 2012; DiSalvo, 2022), there is a sense that design is still insufficiently equipped to address politics and power (De Rosa et al., 2023; Gaziulusoy and Ryan, 2017b; Loorbach, 2022; Tomasini Giannini and Mulder, 2022; Udoewa and Gress, 2023). This article aims to open up the black box of power, and bring attention to complexities that may at times be considered out-of-scope, distracting, or intractable. This article argues that addressing issues of power is not only necessary, but can also be constructive, and that this aim serves the development of design approaches that can address the complex problems which the world faces today.

Power is a uniquely multifaceted concept which has been theorized in various ways: as a form of coercion (Weber, 1978), as the capacity of actors to mobilize resources, strategies, and techniques to achieve their goals (Avelino and Rotmans, 2009), and as an intersubjective, relational phenomenon (Dowding, 2003; Gill, 2020; Nightingale and Ahlborg, 2018). This article engages with these various conceptualizations, but takes a distinct, different starting point. This starting point is the situated positionality of the designer, who faces, and must concretely work with, issues of power in design settings and projects. As such, the understanding of power developed in this article emphasizes constructive as well as coercive forms of power, is explicitly interventionist and experimental, and is intrinsically pragmatic. Furthermore, this understanding of power is characterized by a contextualization in societal transitions, where issues of power are especially pertinent, as transitions have an inherent normative directionality, are characterized by continual value contestations in

multi-actor engagements, and are long-term, open-ended processes with deep uncertainty (Köhler et al., 2019). Hence, this article engages with the fields of transition design (Gaziulusoy and Erdoğan Öztekin, 2019; Irwin et al., 2015: 201; Sevaldson and Jones, 2019) as well as systemic design (Jones, 2014; Van der Bijl-Brouwer and Malcolm, 2020). Overall, this article serves design approaches which are power literate in contexts of transitions and complex systems, and positions design as a practical mode of inquiry into power in these settings.

To characterize the relationship between design and power, a framework of five dimensions is presented, each of which provides a particular conceptual angle. Each subsequent dimension constitutes a progressively more complex and nuanced understanding, which integrates the preceding dimensions. Importantly, the more nuanced dimensions – whilst more ‘complete’ – do not always serve pragmatic purposes of designerly practice and intervention, as they integrate factors which may, at times, be outside of the scope of a designers’ work. Such nuanced perspectives can have a disempowering effect, as they may illuminate issues that are impossible to change or transform. Hence, depending on the particular situation in which a designer finds themselves, they may adopt the appropriate conceptual angle, which focuses on those relevant aspects which are in-scope for intervention. There is an inherent tension in this process, which may be understood through the social-theoretical dichotomy between structure and agency (Walsh, 1998). On the one hand, the normative demands of transitions require designers to take a broad scope of system transformation, inclusive of sociopolitical complexities. On the other hand, the practical constraints of designerly practice require a narrowly defined locus of intervention. The proposed framework sensitizes designers to these tensions and provides language to frame them. It does not suggest that designers can get a complete ‘grip’ on issues of power, but rather, argues that power consist in this very tension of the attempt to, and impossibility of, getting a grip on complex societal issues.

The five dimensions of the framework are agency, relationality, scale, temporality and abduction. This division was determined through 1) synthesizing relevant literature from the fields mentioned, and 2) devising a guiding heuristic serving our own practice. To show how this framework is grounded in our own practice, each dimension features a short vignette which reports on a relevant empirical experience. The vignette describes a situation which is illustrative of the subsequent theoretical discussion. It does not necessarily include all

aspects of that discussion, but serves as an entry-point from which to initiate theoretical synthesis. In this discussion, the term ‘designer’ can refer to both ‘expert’ and ‘diffuse’ forms of design (Manzini, 2015), although primarily diffuse forms, which are increasingly prevalent in transition contexts.

In the vignettes, we draw from a research project which we participated in between 2021 and 2025, named the Local Inclusive Future Energy (LIFE) project. This project aimed to address entangled social and technological issues in the local energy transition in Amsterdam Southeast. The project consortium consisted of various partners, including the municipality, local businesses and NGO’s, and academic partners of diverse disciplinary orientations. The purpose was to develop innovative solutions to address the congestion of the local electricity grid, whilst catering to the needs of local stakeholders, especially residents from an underprivileged neighborhood. As partners in this project, we focused on addressing the needs of the residents, while contributing to the joint approach and collaboration between the various partners. The vignettes are written as reflexive pieces which explicate our positionality within the project, and the manner in which power was encountered from that position. The “I” in these vignettes refers to the first author of the paper. While this article describes key experiences from this project which are informative for the present purpose, we refer to other papers for a more comprehensive empirical account, including the design anthropology approach which was used (Van Leeuwen et al., 2025; van Leeuwen and Singh, 2023; Van Leeuwen and Singh, 2024).

3.2 Agency: Value-Laden Action in Design

At its inception, the project brief seemed straightforward enough. The LIFE project was commissioned to research and develop smart solutions for the local electricity grid, and its envisioned outcome was a ‘smart energy platform’ – a digital product-service system which would provide innovative energy services to local energy users, and enable new forms of interaction between them and with the wider energy system. My role was to visit the neighborhood, engage the residents in a participatory process to gather insights into their needs, and to deliberate these needs with our technical project partners to shape the platform’s design.

Once in the neighborhood, the reality on the ground quickly revealed a fundamental mismatch. The ‘smart platform’ was misaligned with the needs of

the residents. There were several reasons for this. The households in the area had little access to rooftop solar panels, electric vehicles, or other smart energy technologies. Without access to such energy assets, there would be little purpose in connecting to a smart energy platform, and little value to be derived – both for them, and the rest of the system. But the mismatch ran deeper than infrastructure. The framing of ‘developing a smart energy platform’, intended to ‘solve problems in the local energy transition’, created alienation with the residents. They perceived energy transition as a ‘luxury problem’ and ‘not relevant for them’.

It became clear that the project’s framing was too narrow: the neighborhood’s needs were shaped by a complex interplay of social, economic, cultural, and political factors that could not straightforwardly be reduced to a ‘problem to be solved’. The gap between what the platform intended to deliver and what the neighborhood actually needed was not a technical one. It was social and political one. It became clear that, for our project to address the needs of this neighbourhood, a complex negotiation with our project partners would be required. This would require us to take a normative stance, advocating for the needs of the neighborhood over the technical problems of the electrical grid.

While the project addressed entangled social and technical problems, it was skewed towards the technical dimension, which many of our partners were focused on. To address the social needs of the neighborhood in question, would require a change in focus beyond the initial scope. To realize this change, required us to take a strong normative stance informed by moral and ethical reflections on the purpose of the project and our role within it. This normative stance, and especially the action resulting from it, is what is conceptualized here is as the exercise of agency. Agency concerns how designers can engage in value-contestation through intentional action. Exercising agency may be necessary, when the process of reframing the problem-solution space demands normative contestation with collaborators. If the designer finds that a directional shift is required for a project, they may have to challenge the incumbent powers that have shaped, and are shaping, its current direction. Because of their normative directionality and inherent contestation, transition contexts may especially demand of designers that they explicitly position themselves relative to this normative direction.

The occasional necessity to take a normative stance is not captured by value-neutral understandings of design, which we briefly discuss here before elaborating on the concept of agency. Note that in this context, values are considered as social or political values, rather than technical values. Design has been commonly understood as a practice of “devising artefacts to attain goals” (Simon, 1996: 114), as well as a means of rational problem-solving (Dorst, 2004). From these perspectives, the goals, problems, and solutions of design can be technically defined, and designers can use methods to frame the needs of their users and clients and conceptualize, prototype, and design the solution. This value-neutral understanding of design parallels understandings of power as *the capacity to achieve goals*. For example, Avelino & Rotmans define power as “the ability of actors to mobilize resources to achieve a certain goal” (Avelino and Rotmans, 2009). Whilst determining a goal might be informed by values, the exercise of power to achieve it can be seen as value-neutral. From this value-neutral stance, design may be regarded as a form of power exercise which mobilizes specific types of resources – such as design methods, techniques, and materials – to attain specific types of goals – such as solving problems or meeting user needs. Understanding power as the achievement of goals is represented in Figure 3.1A.

Many scholars have questioned the conception of design as merely a value neutral problem-solving practice. First of all, transitions cannot be straightforwardly ‘solved’ (Coops et al., 2022), and the complexity of societal challenges exceeds the cognitive capacity of designers to grasp the full scope of the problem-solution space (Dorst, 2019). Secondly, designing in a systemic context requires recognizing the interconnectedness of diverse problems and their different framings, rather than identifying singular ones (Van der Bijl-Brouwer and Malcolm, 2020). Thirdly, ‘wicked problems’ which characterize complex societal challenges cannot be clearly defined or demarcated (Rittel and Webber, 1973). Finally, some have argued that the rational problem-solving paradigm of design itself contributes to societal problems, for example by uncritically serving wasteful consumerism (Fry, 2003). From these findings, two reasons may be inferred for why transition contexts are unsuitable for the value-neutral problem-solving paradigm. Firstly, the complexity and open-endedness inhibits the grasping of well-defined problems and solutions: any problem-solution definition is by necessity partial, local and temporary. Secondly, the complexity is not technical but social: it is constituted by divergent actor

interests, values and understandings. To navigate this complexity may require that designers engage in value-laden debates, negotiations and interactions.

This article proposes that this alternative stance may be understood through the concept of agency, which has been considered as an aspect of power (Haugaard, 2012). Agency is commonly understood as the capacity to take intentional action (Bratman, 1991), and as “the ability to do otherwise” and “intervene in the world” (Giddens, 1984: 14). Compared to the goal-achieving conception of power, agency relocates focus from the outcome to the directionality of intervention, and is therefore well-suited to the open-endedness of transitions. Understood in this way, agency is represented in Figure 3.1B. More importantly, agency is associated with a commitment to particular societal causes, movements, or values. As such, a consideration of agency can address the need to better equip designers to act in morally-charged discussions (Goss, 2025; Goss, Tromp, et al., 2024), the need to more strongly commit to values such as justice and sustainability (Coops et al., 2022), and the need to consider the political implications of participatory encounters (Gaziulusoy and Ryan, 2017b). A consideration of agency serves the need to translate ethical reflections into concrete actions. As such, the exercise of agency is explicitly constructive, and serves the ambition of design to contribute to better futures.

To be clear, this argument does not propose that all forms of design, and all designerly practice, always entails the exercise of agency. At times of sufficient coherence between the diverse actor interests and the overarching normative transition direction, designers may not need to exercise agency - forms of value-neutral “satisficing” (Simon, 1997), or taking up roles of mediation, orchestration and facilitation (Geenen et al., 2022; Van Arkel and Tromp, 2024) may be adequate. While value contestation may occur, designers may at times be neutral facilitators of this rather than participants (Gaziulusoy and Ryan, 2017a). **But,** this paper does argue that, in the context of societal transitions, designers should be prepared for situations where value commitments on their part are required, such as the one in the authors’ project. Such value commitments may be implicated in many aspects of designerly practice, as a design project is the result of many micro-decisions, and non-decisions, where the designer is an active agent (Bratteteig and Wagner, 2012).

As the agency of the designer interacts with that of other actors, this may lead to open contestation and conflict of values, which is represented in Figure

3.1C. The articulation of value contestation has been explicitly considered a goal of transition design (Gaziulusoy and Ryan, 2017b), as well as other fields such as agonistic design, (Andersen et al., 2015; Björgvinsson et al., 2012). The tensions inherent in this process are well illustrated by the following quote from Björgvinsson et al. (2012), who wonder whether they “should have taken the issue around how youngsters could use public buses further. [...] Should we, together with RGRA, have gone into an agonistic negotiation with the bus company concerning who should own and occupy the digital spaces on the buses, as well as the bus company’s engagement in the Middle East?” (Björgvinsson et al., 2012: 143). The kind of dilemma illustrated here is likely to become more frequent, and explicit, when designers take seriously their potential for harnessing agency. To handle such situations, it is helpful for designers to clarify the values which they are committed to, as well as the lengths they are willing to go to realize these values, and what they are willing to concede when confronted with opposite interests.

Of course, the agency of a single actor does not exist in a vacuum: as represented in Figure 3.1D, agency is both enabled and constrained by other forms of power (Avelino, 2021), and agency and societal structures mutually produce each other (Giddens, 1984). Whilst later dimensions of the present framework elaborate on these broader influences, agency is a key starting point, as it is only by considering how agency is enabled and constrained, that other forms of power – which have a relational, intersubjective, or structural character – may become discernable. It is in this way that the situated positionality of the designer is taken as the starting point for the conceptualization of power, as it may serve to avoid overly abstract or theoretical characterizations. Importantly, we do not propose that an agency perspective on design should completely replace the problem-solving approach, which may still be suited for specific contexts and projects. But, transition contexts implicate the designer themselves in its politics, meaning that a value-neutral position is not always tenable.

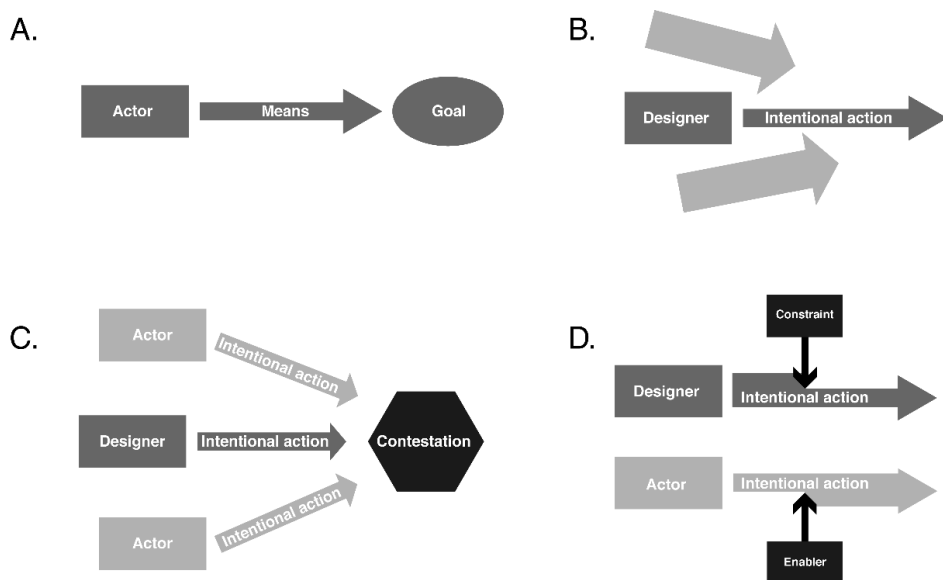


Figure 3.1: an illustration of various aspects of power and agency. **A** represents the understanding of power as a value-neutral capacity to achieve goals. **B** represents the capacity of the designer to exercises agency, where the directionality rather than outcome of intervention is emphasized. **C** represents how the entanglement of multiple agencies can result in contestation. **D** represents how agency can be enabled or constrained by other powers.

3.3 Relationality: Mitigating Power Asymmetries through Reciprocity

At a community center, not long into our first round of interactions in the neighbourhood, a resident looked at me with a tired look and said that they were ‘asked the same questions over and over again’. And the residents reported that, and that ‘little had changed’ as a result of numerous participatory projects that had been organized by authorities and institutions, including the local government and universities.

Hence, it became clear to us that the neighbourhood was dealing with participation fatigue and a history of extractive research. And yet, in an uncomfortable sense, we were reproducing the same pattern. Our project’s

structure, aims and activities had been defined long before any resident had been consulted. Even our role, as 'design researchers', was thoroughly embedded in a university environment, funded by an institutional project - it was impossible to step outside of this. How could we collaborate with people on a relatively equal basis? Given that the relationship between residents and institutional actors was deficient, some repair work was required. The asymmetry was structural, and goodwill alone would not repair it. We experimented with several ways to foster more reciprocal engagement of giving something meaningful back.

Asking people to invest their free time and energy to join workshops felt inappropriate. After all, we - and our colleagues - were afforded the possibility to work on this project on a professional basis, funded accordingly. Why should we have this opportunity, while local residents do not? Among other measures, with a local partnering NGO, an hourly financial compensation was arranged for the participation of the residents for their participation. This was a minimum correction we could implement to foster more reciprocal engagements. It signaled that we understood their time had value, that their participation was not something we were entitled to, and that reciprocity, however imperfect, had to be built, not just its intentions.

The above vignette shows how our relationship with the local residents, and issues of relationality more generally, came to the forefront. There was a distinct power asymmetry between the residents and other partners in the project, and even if our project scope could be reframed to address their needs, it was important to provide them appropriate agency to co-shape this process. To better understand and frame this issue, a relational understanding of power is required, which this section elaborates on.

In the context of societal transitions, relationships between citizens and institutions have been addressed through the lens of public participation (Barnes et al., 2003; Chilvers and Longhurst, 2016). Participation is an issue which is really about power (Arnstein, 1969), which can result in various degrees of problematic tokenism and extractivism, and which implies that - whilst publics and citizens can participate - control still resides with institutions (Bogner, 2012). Design research has also grappled with the issue of participation, especially in participatory design. The primary goals of participatory design have been described as restructuring power (Eriksen et al., 2014; Kensing and

Greenbaum, 2012), and as “to rebalance the power relations between users and technical experts” (Kensing and Blomberg, 1998: 181). Participatory designers often have explicit or implicit goals of promoting empowerment (Agid and Chin, 2019; Björgvinsson et al., 2012; Tomasini Giannini and Mulder, 2022).

To elaborate how designers can engage with issues of power in participation, it is fruitful to adopt a relational conception of power (Dowding, 2011; Gill, 2020). One key perspective comes from Nightingale & Ahlborg (2018) who define power as a ‘relational capacity to act’ that is contingent and emergent from social dynamics. In this view, power is not an individual capacity for agency, but resides in the relationship between multiple actors, in the intersubjective space that each can relate to with partial perspective and influence. Actors are subject to this relational power and can only position themselves relative to power relations in which they are entangled. Informed by these considerations, we define power relations as the interdependencies in capacity for action between actors. In other words, the concept of power relations concerns how actors influence each other’s capacity to exercise agency and achieve goals. A particular, and important kind of interdependency is a power asymmetry, which denotes large differences between actors’ capacity to act. In the vignette, the relationship between the project and the residents is characterized by a large power asymmetry, which has a disempowering effect on the latter, and inhibits their capacity to act.

Various additional concepts help enrich to this understanding of power relations. Notably, Avelino distinguishes ‘power-over’ and ‘power-with’ (Avelino, 2021), which are represented in Figure 3.2. Power-over refers to relationships of domination and oppression, in which a powerful actor can coerce less powerful actors into doing things they would not otherwise do. Power-over resembles classic conceptions of power as coercion (Weber, 1978), and characterizes extractive forms of design or research in which participants are regarded as mere data sources (Udoewa and Gress, 2023). On the other hand, power-with points towards a more consensual form of power where two or more actors work together for a common purpose. Power-with has been regarded as a goal of participatory design (Tomasini Giannini and Mulder, 2022), albeit one that may be hard to realize in practice, given the numerous other powers which co-shape such collaborations. Another aspect of relational power concerns the notion of empowerment (Avelino et al., 2019), which refers to a relationship between more and less powerful actors, where the intended outcome is that the less powerful

actor increases their capacity to act. Importantly, relations of empowerment also reinforce a power asymmetry and can thereby paradoxically result in disempowerment and power-over (Hardy & Leiba-O'Sullivan, 1998). Hence, terms such as participation and empowerment ought to be used carefully in design.

What are, then, constructive pathways for designers to work with power relations? The emerging field of relational design, which regards design as a practice of relation-building, offers interesting potential here. Relational design regards power and politics as core concerns, and explicitly addresses agency as a relational rather than individual phenomenon (De Rosa et al., 2023; Nielsen and Bjerck, 2022; Udoewa and Gress, 2023). In relational design, aspects such as building trust, mutuality, and care become a core focus of designers (Akama et al., 2019; Lake et al., 2022; Light and Akama, 2014). We suggest that a key guiding principle for navigating power relations in design is reciprocity: a fostering of fair exchanges between collaborators. This principle guided the intervention, described in the vignette, whereby local residents were afforded a financial compensation. Of course, the principle of reciprocity exceeds this transactional form, but it is a clear example.

The context of transitions, which exceeds the scope of human-to-human interaction, calls for several further considerations for relational design. Importantly, relations between citizens and institutions are intrinsically characterized by large power asymmetries which are impossible to balance (Farr, 2018), as well as power relations between diverse institutional actors such as governments, businesses, universities, and NGO's (Avelino and Wittmayer, 2016). Relations with, and between, institutional actors are qualitatively different from human-to-human relations, which will be further elaborated in the next dimension of scale. Still, designers may help to bridge the paradoxical chicken-and-egg problems which often emerge between institutional actors (Evald et al., 2025; Waardenburg et al., 2020) by acting as mediators and facilitators in the in-between space. It is in this in-between space, where roles and responsibilities are emergent, that designers may have a significant capacity to co-shape power relations (Dantec and DiSalvo, 2013; Salmi and Mattelmäki, 2021). Although power relations cannot be completely 'designed', designers can work to create spaces where power relations can organically restructure in desirable directions, instigated by particular interventions or prompts. Of course, the direction of desirable restructuring is context-dependent. The question for

designers in transition contexts, is how relationships, networks, and collaborations among actors may be strengthened whilst appropriately addressing the distribution of power among them.

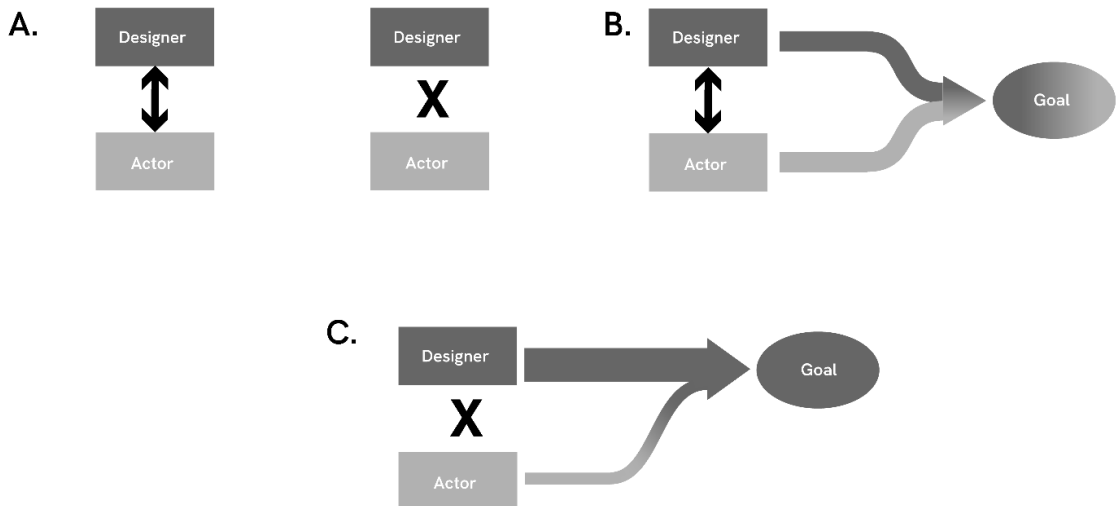


Figure 3.2: an illustration of various aspects of power relations. **A** represents how relations can be characterized by trust and mutual understanding (on the left) or the lack thereof (on the right). **B** represents power-with, where multiple actors act together towards shared interests. **C** represents power-over, where less powerful actors are made to act towards the interests of more powerful

3.4 Scale: Bridging Between Communities and Institutions

While the provision of an hourly compensation allowed the residents to participate on a more equal basis in the LIFE project, the issue of providing them a better position in the local energy transition was not yet addressed. Among the local commercial stakeholders, there was a willingness to explore partnerships with the neighborhood, yet also a lack of clarity about how this should look like.

Coming with the intention to facilitate reciprocal collaborations between them, we suggested that the businesses can invite the residents over for an open conversation, to get acquainted, exchange their interests for the area,

and explore future possibilities. We had already heard that the residents were open to, and interested in this. When we proposed this to our commercial partners, however, this proposal was met with reluctance. The commercial partners declared that they were not interested to 'meet with some individual residents who don't represent anyone'. In other words: the absence of a greater collective which could represent the entire neighborhood prevented a conversation from taking place.

While we sensed that a meeting would still be informative for building mutual understanding and rapport, we also realized that under the institutional logics of the energy transition, the residents would indeed need to be organized to have agency. Therefore, we engaged in the initiative to establish a local energy community in the neighborhood, a formal organization which could represent the interests of the residents. Over the course of two years, a - at times tedious - co-creation process took place with the residents, featuring monthly sessions where future visions for the energy community were made tangible using LEGO, and where key issues were discussed and deliberated. Through establishing the local energy community, the residents could position themselves in relation to the greater system, and engage with other actors in the local energy transition.

The power relation described above, does not merely consist in a quantitative asymmetry, but in a qualitative difference between the scale at which actors reside. To further characterize this particular power relation between institutional actors on the one hand, and people and communities on the others, we make use of the multi-level perspective (MLP) which distinguishes micro-, meso-, and macro-scales of long-term sociotechnical change (Geels, 2005). The micro-level represents local niches of experimentation and innovation, the meso-level represents incumbent institutional regimes that provide stability, and the macro-scale represents the greater societal landscape of external influences. For the present purpose we will focus on the niche and regime levels, where power plays an interesting role.

It can appear as if there is a hierarchical relationship between the different levels of the MLP: that the regime level is higher than the niche level and hence has power-over it. There is indeed a form of power is derived from the institutional structures, norms, and conventions of the regime, which has been termed dispositional power in power theories (Clegg, 2023; Grin et al.,

2011). Dispositional power is derived from the manner in which the regime legitimizes power and authority, and can concern formal organizational roles (e.g., of policy-maker, technical subject expert, or designer) as well as informal privileges related to social, economic, or cultural background. Hence, it relates to what has been called “privilege” and “role power” in design research (Goodwill et al., 2021). Since designers increasingly act within and across diverse system scales (Geenen et al., 2022; Goss, de Koning, et al., 2024) their engagement with dispositional power bears consideration. At the same time, it has been emphasized that the levels of the MLP are not intended to represent a hierarchy, but rather different degrees of structuration of local practices (Geels, 2011). Hence, another interesting question is to consider how designers participate in diverse local practices characterized by varying degrees of structuration and institutionalization, and how power plays a role in these practices. In the following paragraphs we first focus on the latter, and then return to dispositional power.

In micro-scale niches, sociotechnical change takes place through innovation of new technologies, services, and practices. This often happens through semi-controlled experimentation in environments such as living labs (Keyson et al., 2017). By bringing local innovations to the greater system, niches have been said to exercise ‘innovative power’ through a transformative impulse (Avelino, 2017). This is of course a likely arena for designerly activity, as designers often contribute to the innovation of new tools, services, and techniques. Besides the innovative power of design, however, it is also informative to consider designers’ roles in supporting community-based projects. Several authors highlight community- and place-based interventions as key sites where transformations in values, practices, and meanings occur. For example, Lake et al. (2022) designate community building as ‘scaling deep’, and De Rosa et al. (2023) consider how designers can strengthen connections by supporting community narratives. Kossoff et al. (2015) argue for a transition design approach that fosters ‘authentic’ communal relations, and Escobar (2020) and Akama et al. (2019) advocate for designing alternative ontologies based on indigenous values, including relationality and reciprocity. These observations point to a focus on relationality and power-with, which is supported by Grin et al. (2011) who recognize a key role for relational power at the niche level.

Very different dynamics unfold at the meso-level of the sociotechnical regime, which consists in a higher order of institutionalized rules and regulations, and in a standardization of meanings and practices. The regime plays a stabilizing role, and has been said to exercise 'reinforcive power' (Avelino, 2017). Design is increasingly adopted in regime contexts, as is recognized in calls for design to 'enable governance of highly strategic and complex policy processes' (Lähteenoja et al., 2023), and the prevalence of design in policy-making (Blomkamp, 2018, 2022). To further understand the role of power in this context, Foucault's concept of *governmentality*, which points to the manner in which modern institutions exercise power, is fruitful (Foucault, 2010). Using quantitative logics and technical instruments of measurement, administrative institutions can enable and constrain the collective mode of action of a large set of actors. Governmentality operates through the abstraction of human populations into manageable concepts, by the filtering of these concepts through social structures, and through the self-disciplinary mechanisms which these concepts and categories induce upon subjects. Issues of governmentality appear to be related to some of the relational challenges that occur when institutions and citizens aim to collaborate, co-produce, or co-create, as it is the very actor categories which may inhibit greater power-with. Importantly, the use of design approaches in regime contexts has been found to reconfigure these governing practices by encouraging more relational, empathic, interactive, and reflexive forms of engagement between public institutions and citizens (Bason, 2017; Van Buuren et al., 2020).

In this way, an important difference between institutional and community actors consists in the handling of domain-specific expertise and technical knowledge. This difference shapes their power relations in several important ways. First of all, technical knowledge is often mobilized by regime actors to depoliticize issues (Turnhout et al., 2020). This move empowers experts and disempowers laypeople, and hence, reinforces a power-over hierarchy. Furthermore, while regimes tend to aim for measurable and quantifiable impact at scale, community-based projects desire to be respected on their own terms, and not reduced to merely 'one amongst many' (Fitzpatrick et al., 2024). Furthermore, collaborative efforts between institutions and citizens tend to challenge established notions of power, authority and legitimacy (Bovaird, 2007), which is where relational power meets dispositional power. The impossibility of defining 'redistribution of power' as a measurable outcome

(Durose et al., 2017) makes it difficult for such efforts to succeed and persist in regime environments. This is represented in the vignette, which shows how the only conceivably successful outcome was for the community to ‘upscale’ into an actor capable of participating in the regime.

These considerations have several implications for designers working with, or across, diverse system scales. First of all, for designers working with communities, it is crucial to reflect on their own dispositional power: how do their roles, privileges, and cultural perspectives affect their collaborative engagements? The same goes for designers working in regime contexts, where the designer role may confer legitimacy to conduct various forms of experimental work, but also constrain designers’ capacity to contest the institutional structures that confer this legitimacy. Furthermore, designers often lack the domain-specific knowledge required for regime activity (Goss, Tromp, et al., 2024). Finally, considering dispositional power requires that the institutionalization of design itself is made explicit: how does the embedding of designerly practice in academic, commercial, or governmental institutions enable and constrain it?

3.5 Temporality: Negotiating Futures in the Present

While establishing the energy community could allow the residents to become an actor in the energy transition, we quickly encountered other serious challenges. Our work was framed by several, at times conflicting, timelines. First of all, the national policy to realize net-zero carbon emissions by 2050 was an overarching timeline for the energy transition. At the same time, the congestion issues in the local electricity grid were urgent, and required immediate solutions. We had to contribute towards both of these timelines in a project that itself had a 4-year time horizon, meaning that tangible outcomes should be delivered at the end of these 4 years.

During the co-creation process in the neighborhood, however, we learnt that the resident needs are characterized by yet again different temporalities. First and foremost, they expressed that their daily needs and expenses were a priority. While the financial compensation helped to address this, it was necessary to explore how the energy community could also provide such benefits. In particular, the residents were keen to make sure that the initiative

could help to reduce their energy bills. In the co-creation process, the residents' inquiries frequently brought us back to this issue.

Beyond financial concerns, people also held a broader concern for their local environment and its wellbeing. While we were focused on delivering outcomes by the end of the 4-year project deadline, the residents' concern for the living conditions of the neighborhood extended into the future indefinitely. Hence, for the outcomes of our research to be meaningful, they should provide a perspective towards such permanent improvement. It was unclear how we could provide this: after all, the funding and support from our project would end after 4 years.

Hence, we had to balance two temporal sensibilities. On the one hand, we had to provide clear pathways towards guaranteed and narrowly-defined outcomes, especially economic benefits. On the other hand, we had to provide perspective towards future continuation and growth of the initiative, including for it to continue to yield new insights and connections, and respond to uncertain transition developments. Most important, however, was the tension between the temporary character of our project, and the open-endedness of transition work. If we 'leave' the neighborhood after 4 years already, what is the likelihood that persistent transformative outcomes can be achieved?

The fourth dimension of the framework concerns the temporal dimension. The vignette shows how different stakeholder needs are characterized by different timeframes, all of which need to be accounted for. The need to account for multiple timeframes and incorporate short- and long-term interests is a recognized factor of importance for transition design (Coops et al., 2022; Goss, de Koning, et al., 2024). Another challenge is the open-endedness of the energy transition, as well as the livability of the neighborhood, whilst the project is temporary. While there is a tendency to evaluate individual projects on the basis of what is achieved within their timeframe, the open-endedness of transitions implies that what happens afterwards is of equal, perhaps greater, importance. Whilst designers might implement interventions as temporary experiments, residents may regard them as failures if these experiments do not provide persistent benefits. To account for this challenge, evolutionary approaches - which focus on numerous small interventions over time and provide a perspective towards future continuation - might be required (Van der Bijl-Brouwer and Malcolm, 2020). Such approaches can remain continually adaptive

to external changes (Jones, 2014) and are well-positioned to track how power changes over time.

To further characterize these temporal tensions in terms of power, a conceptualization of *power dynamics* is informative. Power has been recognized as a temporally dynamic phenomenon, for example by Ahlborg who considers power as contingent as well as productive of social change (Ahlborg, 2017) and by Avelino & Rotmans who distinguish different forms of power based on their relation to structural societal change (Avelino and Rotmans, 2009). Power dynamics comprise the continually changing field of power relations, and the fluidity and flux of actor interactions, whereby capacities to act change over time. Power dynamics include those interactions, mechanisms and processes by which particular future pathways are opened up or closed down, and which shape the entanglement between present-day actor agency, emerging potentialities and envisioned future outcomes. The conception of power dynamics integrates power relations as discussed before, but points towards their dynamic fluidity along the time axis. To elaborate on power dynamics, we distinguish two concepts: control and emergence. Power dynamics are here defined as the interplay between mechanisms of control and processes of emergence, both of which are elaborated in the following paragraphs.

Design is often described as a highly future-oriented practice, which aims for desirable futures that are better than the present. This aim is related to a culturally specific understanding of time: that time progresses forward in a linear fashion, and that the future is a singular destination that lies ahead on this linear path (Adam, 1998). By positing future goals of choice, and deploying resources, strategies, and tools – i.e. mobilizing power – to attain those goals, the future may be controlled and even colonized. This understanding of time and the future is associated with forms of reasoning based on risk minimization, measurement, and quantification (Appadurai, 2013), which we characterize as forms of *control*: a form of power that aims to ensure that specific future outcomes are realized. This notion of control is implicit in the problem-solving paradigm of design and the goal-achieving paradigm of power. The vignette shows various controlling tendencies: the need of the project to deliver pre-defined project outcomes, but also the residents' desire for the energy community to deliver well-defined economic benefits.

In the context of transitions, attempts to control future outcomes are problematic for multiple reasons. First of all, since transitions are open-ended

processes characterized by uncertainty, it is impossible to specify concrete end-goals, much less tangible strategies to realize them in controlled fashion (Köhler et al., 2019). Openness to uncertainty may be generative as well as detrimental (Akama et al., 2018; Salazar et al., 2017) and acknowledging uncertainty entails openness to value contestation and power dynamics. Secondly, besides a recognition of uncertainty, the existence of a broad diversity of ways of being, thinking, and doing – which designers often aim to understand and include – means that futures are not singular but plural (Kambunga et al., 2023; Salazar et al., 2017). To retain plurality, the specificities of these diverse futures should be respected on their own terms, rather than effaced in a universalizing vision (Escobar, 2020). Thirdly, the notion of control is founded on a separation between the present and the future, and between the design process and outcome. This separation can be recognized as superficial if future visions are understood to act back upon the present (Gaede and Meadowcroft, 2015), or even further, that futures are not remote destinations but are always enacted in the present (Kjaersgaard et al., 2016). This observation serves to avoid one of the pitfalls of speculative design, namely that its insistence on critical distance can result in a separation of futures from the sociopolitical contexts, relations, and contestations where they are shaped (Gerber, 2018).

While mechanisms of control serve to ensure future outcomes, the transforming potential of a plurality of futures in the present is defined by the concept of *emergence* (Smith and Otto, 2020). A focus on processes of emergence draws attention from the future to the present. Rather than focusing on distant future timeframes, and integrating interests with diverse timeframes in a complex manner, attention is drawn to how these interests are enacted in the present, and how their negotiation may remain open to continued change. Whilst mechanisms of control ‘close down’ futures, processes of emergence ‘open up’ futures. Drawing attention to these distinct temporal qualities can sensitize designers to power dynamics. For example, common control mechanisms include pre-defined project deadlines and deliverables, and allocation of financial budgets, which may be tightly defined with little flexibility. To open up such mechanisms to futures which serve alternative interests, can require considerable effort, and confrontation with power. At the same time, some interests which suffer from excessive uncertainty may benefit from a greater emphasis on control. For example, for people struggling to make ends meet, or for communities attempting to safeguard resources for their own local

projects, certainty about the availability of future support is highly important. In other words, openness to uncertainty is a privilege. Overall, attending to power dynamics requires that designers look beyond their own deadlines, and simultaneously explore how design activities can provide short-term value to citizen collaborators, fit into long-term institutional agendas, and extend into open-ended transition pathways and activities.

3.6 Abduction: Sensemaking in Transitions through Design

As mentioned before, the project consortium consisted of both 'social' and 'technical' partners, and there was a distinct difference in how these partners understood the aims and activities of the project. From our encounters in the neighborhood, we realized that the overall framing of the project was weighted towards the technical rather than social side. In the early phases, many of our activities were aimed at bridging this difference, and at providing more balance to the project framing.

To this end, we used a particular designerly strategy in consortium workshops. To counterbalance the 'smart energy platform', we positioned a second entity as a to-be-designed outcome of the project: the so-called 'Social Platform'. The exact nature of this Social Platform was to-be-determined, but at the very least, it was imagined to address the needs of the residents which we now understood. Of course, we realized that this was an overt simplification: the needs of the residents were complex and entangled with a variety of systemic problems, and could not be straightforwardly solved. This simplification was strategic, however, as it served to bridge the difference with the technical partners. By positioning a social 'object' which could 'solve' social issues, cross-disciplinary conversations about the relationship between the social and technical now became possible.

To bring further focus to the political dimension of the subject matter, we further defined the social platform as a 'Local Energy Institution' in consortium workshops. This prompted project partners to discuss the power issues which were prevalent in the local energy transition, leading them to imagine that the Local Energy Institution would work to 'balance power relations'. Ultimately, the abstract concept of the Social Platform became manifest in the initiative to establish a local energy community, which was described before.

The final dimension of abduction is more specific to expert forms of design than the previous ones. Design abduction, as conceptualized here, concerns how designers enable in sensemaking and ideation by moving between abstractions and concretizations. Abduction is related to the tendency in transition design to simplify the conceptual framing of transitions, making them manageable issues that can be designed for (Goss, 2025). While such simplification is unavoidable and inherent to design, it also comes with risks. Simplifying the context to render it designable might result in a design that loses relevance to the real-world context, or in a misrepresentation of stakeholder needs, interests, and values. These and other issues are discussed here in terms of power. Since abduction is a specific approach to knowledge creation, this discussion proceeds by considering the interconnection between power and knowledge.

To do so, we first elaborate on what design abduction is. A common understanding of design abduction is that it is the step in the design process where designers make a creative leap or 'bridge' from defined problems to imagined solutions (Dorst and Cross, 2001). In this sense, abduction is about the creation of novelty and is associated with designers' intuition and creativity (Kroll and Koskela, 2015). Another way of defining abduction is as 'the use of abstraction to allow novel connections to be made between apparently unconnected things' (Snowden, 2024: 51). By drawing such new interrelations, abduction allows designers to synthesize how diverse elements in their context of interest are interconnected (Kolko, 2010). Hence, abduction is a means of postulating a possibility for the purpose of enabling further investigation, deliberation and experimentation. Usually, such further steps include the materialization of abstract concepts into concrete artefacts. This concretization of the abstraction serves to make ideas tangible, to materialize the interconnections that were conceptually established, and to enable an experiential engagement with the idea. Hence, the design process can be considered an iterative process of moving between the abstract and the concrete through prototyping and ideation, until a desirable outcome is achieved. In this way, design abduction enables the movement between abstractions and concretizations (Koskela et al., 2018), which is central to individual and collective sensemaking in design (Kolko, 2010). The potential of design abduction is illustrated in the vignette: it shows how the positioning of the 'Social Platform', allowed for an engagement with sociopolitical relations,

and for reframing the primary project outcome from a technical product to a social organization

Since abduction is considered a form of knowledge creation, insights into the interconnection between power and knowledge can highlight useful ways in which power is implicit in design abduction. Informed by Foucault and other social theorists, Avelino describes how power may be mobilized in the construction of knowledge, and how knowledge can itself co-shape new power relations (Avelino, 2021; Avelino and Rotmans, 2009). Hence, the relation between power and knowledge can be understood in two directions. The first is how knowledge construction is informed by the negotiation of particular interests. From this perspective, design abduction may be considered as a political act, which is informed by value tradeoffs. These tradeoffs inform decisions to emphasize some qualities of a phenomenon over others, or to establish some new interconnections but not others. The second direction concerns how knowledge acts back upon the world, thereby shaping actors' positionalities, roles, and identities. Here, Ahlborg & Nightingale's notion of *constitutive power* (Nightingale and Ahlborg, 2018), which is closely associated with the relational and dynamic conceptions of power, is informative. Constitutive power concerns the performativity of design concepts or prototypes, and their role in co-shaping power dynamics. As designs are mobilized in social contexts for sensemaking purposes, they can nudge the emerging social interactions into particular directions. Since constitutive power operates through knowledge, it is related to how actors perceive their own identities, and their position within broader social systems and structures. Hence, the manner in which designs communicate such broader systems is of significance for power.

These understandings of power and abduction carry several implications for the context of transition design. First of all, designers ought to be aware and transparent about any implicit and explicit value trade-offs they make in the design process. Furthermore, the mechanisms by which designs act upon transition actors through constitutive power can be investigated more explicitly. If such mechanisms can be identified, they can also be leveraged to transparently support desirable sociopolitical change. Furthermore, design abduction can be a key factor in enabling transition actors to engage in sensemaking about their positioning relative to other transition elements that are not proximate in time or space. For example, visualizations and frames can

help envision interrelationships between people's local context, distant actors, other system domains, and future possibilities. How these interrelationships are shaped by power can likewise be framed. Finally, the use of design in micro- and meso-scale contexts – which feature different power relations, as discussed earlier – carry different risks for abduction. In community-based work, there is a risk that outputs of abduction are perceived as a flattening and simplification of reality, especially for those with deeply embodied, experiential, and historical knowledge of the context (Fitzpatrick et al., 2024). On the other hand, designers working in institutional regimes, which are characterized by technical definitions and expert knowledge, are challenged to avoid oversimplifying technically defined matters.

Transition design practices use abduction in various ways. The first is framing, where a frame is a heuristic concept which orients designers towards 'the possible', and thereby guides designerly action and practice (Dorst, 2011). Distinct aspects of transitions, such as pathways, desirable behavior changes, and concrete interventions, all require framing and reframing. Framing can open up new pathways for intervention (Paton and Dorst, 2011; Peeters et al., 2023), enable sensemaking across scales and timeframes (Goss, 2025), and create understanding how a concept and target context fit together (Jones, 2014). The second mode of abduction is visual, as new system interrelationships may be envisioned by appealing to the imagination. In transition design, visualizations have been used to depict relationships between people, products, and organizations in novel ways (Gaziulusoy and Ryan, 2017b), to facilitate shared learning through a continual framing and reframing of relationships (Jones and Bowes, 2017) and to facilitate interactions between diverse transition stakeholders by mapping transition pathways (Hyysalo et al., 2019).

In all of these practices, power plays an implicit role. While transition designers can never capture transitions in their totality, design abduction can serve to construct a higher order understanding of – and thereby co-produce – transitions. Through abduction, designers create frames, visuals, and artefacts that can represent and enact particular perspectives, angles, or aspects of transitions, thereby giving form to sociotechnical relations at conceptual, aesthetic, and material levels. Through the iterative back-and-forth between the abstract and the concrete, designers frame existing and emerging infrastructures, actor networks, and social practices. In doing so, they co-shape

society, and the distribution of power within it. Explicating the role of power in these processes can be fruitful for future work in transition design.

3.7 Towards Transition-Design-As-Power-Work

The multi-dimensional overview of the relationship between power, design and transitions provided by this paper, does not result in a clear and unambiguous 'strategy' which designers can easily adopt to address issues of power. As has become clear, issues of power are deeply contextual and situated. Nevertheless, this section will formulate some recommendations, or pointers, which may help designers to address power in their work.

Importantly, power is inherently a tense and conflictual topic. To address issues of power, designers may need to explore, and lean into, the tensions and conflicts which they encounter, to explicate the powers which are at play. In particular, a generative tension exists between 1) the felt need to make better futures, and 2) the nuanced and complex landscape of structural, systemic and societal factors, which can make it seemingly impossible to realize this ambition. Design inherently has a creative and productive impulse, and from a critical perspective of power, the unreflexive embracing of this impulse can be problematic, as it can result in the mobilization of power for particular interests which do not serve a societal good. However, the opposite position - the complete acknowledgement of the complexity of power and societal problems in their full nuance, but the negation of the agency of design - is also problematic. Designers are typically positioned to co-shape the complex problem-solution space of societal issues, and if they do not harness their capacity for agency, space is left for other interests. Hence, we suggest that to deal with issues of power, designers should adopt what Arjun Appadurai has coined "ethics of possibility" (Appadurai, 2013). Ethics of possibility foreground human agency and the hope that the future can be better than the present. Embracing ethics of possibility, entails a non-naïve hope that positive change is possible, that the means of design can be skillfully deployed to challenge, distribute and restructure power in constructive ways.

The nature of transitions is fundamentally social, and social complexity is inherently characterized by power. Hence, the considerations in this article provide pointers towards framing transition design as power-work. In this

understanding, the restructuring of power between transition actors becomes a more central focus of transition design. In doing so, the power of the designer themselves is explicated, and problematic centralization of the power to design transitions in their totality is avoided. The five dimensions of the framework provide an overview of numerous ways in which designers might perform power-work - as pertaining to their own mode of action, the fostering of reciprocal relationships with collaborators, the bridging of scale between institutions and citizens, the negotiation of diverse futures in the present, and the positioning of 'designs' as co-enactors of power dynamics. In these diverse ways, designers participate in the ongoing process of navigating, balancing, and prioritizing diverse interests in transition contexts.

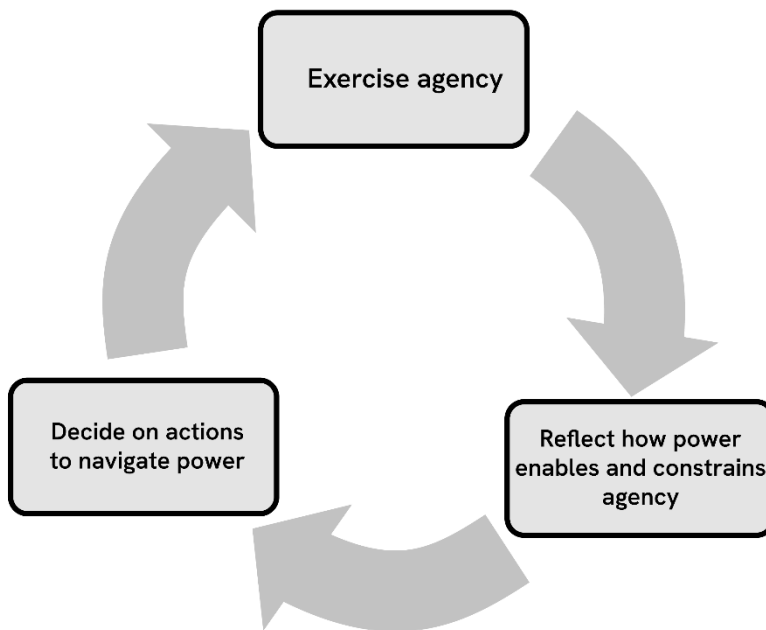


Figure 3.3: A simple loop for performing power-work, which consists in the exercise of agency, and reflection on how this agency is enabled and constrained by power.

To conduct power-work, the situated positionality of the designer is the starting point. From that position, the designer can reflect on their possibility for exercising agency, the manner in which their agency is enabled or constrained by other powers, and the relations between them and their collaborators. As

such, a practical starting point for power-work is a simple loop of action and reflection, which is represented in Figure 3.3. This loop consists firstly in the exercise of agency, and secondly, in reflecting on how this agency is enabled and constrained by other forms of power. The experience of having one's actions limited or opposed in some way can be an informative starting point for understanding how other powers co-shape design practice. Hence, power-work is a reflective practice (Schön, 2013).

Below, a number of reflexive questions are listed which may be used in tandem with the above framework:

Agency

- Towards what interests, or values, do we exercise agency? What resources, means, and techniques are we mobilizing to realize these interests?
- What other powers are enabling or constraining our agency?
- How do we engage in implicit or explicit contestation? Should we, more explicitly, open our own interests up to contestation?
- What aspects of the design process can we take ownership of and accountability for? Where can we not?

Relationality

- How is our agency enabled and constrained by other actors?
- How does the agency of other actors affect our own, and vice versa? What are the interdependencies between other actors' agencies?
- What power relations do we recognize between other actors?
- How do our interests converge or conflict with other actors' interests?
- How can we work pragmatically with actors that don't share our interests?
- How can we address power asymmetries through initiating reciprocal relationships? Can we foster and encourage a sense of empathy, care, and mutuality?
- What relations of power-with or power-over can we recognize?

Scale

- How do hierarchies, privileges, and social status enable or constrain our agency? How about the agency of our collaborators?
- Which institutional regimes are we engaging with? What is our relationship to these regimes - do we aim to challenge or reinforce them?
- How can we facilitate the embedding of transition developments in local, community-based values, meanings, and practices? How can we ensure local contexts are not extracted from, or overdetermined, by institutional regimes? How can local practices and meanings inform and shape higher-level transition processes?
- How can we restructure tendencies of governmentality in institutional contexts?
- How does the institutionalization of design enable and constrain our own agency and that of our collaborators?

Temporality

- What are the diverse timeframes which shape our design process and outcomes?
- How can we track power dynamics over time?
- What control mechanisms do we recognize? To what extent should these be opened up?
- What processes of emergence do we recognize? To what extent should uncertainty be reduced?
- What actors and interests are served by an increase, or mitigation, of uncertainty?
- What is the perspective on the continuity of our intervention beyond a project deadline?

Abduction

- How can we use design abduction to make sense of the ambiguity, remoteness, and uncertainties of transitions?
- Are we at risk of oversimplifying or overgeneralizing the lived experiences of citizen collaborators?

- Are we at risk of oversimplifying or overgeneralizing technically defined policy issues?
- To what extent are our designs the output of a negotiation of particular interests?
- How do our designs act back upon the world, by enacting particular values or shaping particular actor roles and identities?

3.8 Concluding Remarks

To conclude this article we briefly revisit the key concepts positioned in this paper, and comment on the limitations, future prospects and broader relevance of this work. The relationship between power, design and transitions has been characterized by distinguishing five dimensions, each of which defines a different aspect of power. *Agency* is value-laden action which explicitly engages in contestation. *Power relations* are the interdependencies in capacity for action between two or more actors. *Dispositional power* represents the power conferred by privileges, social statuses and roles, especially through one's positioning in institutional regimes. *Power dynamics* comprise the temporal fluidity of power relations, which is mediated by mechanisms of control and emergence. *Constitutive power* is exercised through design concepts and artefacts, as these co-shape power dynamics through their enactment and framing of transition elements, including actor identities and categorizations.

The purpose of this article is to provide conceptual directions, which further theoretical and empirical engagements between design, power and transitions may pursue. Since the present article has focused on a broad overview, many of the arguments and concepts which are discussed can – and should – be investigated in greater depth and detail.

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PART II

The Frictions and Ethics of Intervention

The publications in this chapter report on the early phases of our empirical research, as it took place primarily in 2022 and 2023. As such, they report on the initial activities, actions, and interventions that we undertook, and thereby also on the initial challenges, barriers, and frictions that we encountered. Compared to the other chapters, this chapter features a relatively large component of empirical findings and is lighter on theoretical background. Therefore, this chapter particularly benefits from reinterpretation through the analytical framework presented in Chapter 3. In the remainder of this introductory section, I will introduce each of these papers and list the key findings in terms of the five dimensions of power and design.

CHAPTER 4

This chapter, named *Local Frictions In The Energy Transition: Design Anthropology For The Emergence Of Energy Communities* is a conference paper that was presented and published as part of the *Ethnographic Praxis In Industry Conference (EPIC)* in 2023. The paper is tailored towards this particular community, which consists mainly of ethnographers who work in commercial and organizational contexts. Hence, the paper presents detailed ethnographic reporting in the form of three vignettes and interprets the broader implications of the findings for ethnographic practice. The ethnographic vignettes primarily report on our initial engagements with residents in the Venserpolder neighborhood, focusing on how these engagements may be regarded as failures.

Agency

The ethnographic visits can be interpreted as our intentional, value-laden intervention within the Venserpolder neighbourhood. At the time, our values were largely aligned with those of the LIFE project consortium: we were acting on its behalf. This consortium enables our agency by legitimizing our presence and activities. At the same time, it constrains our agency because we become inextricably connected to the greater energy transition agendas that the consortium is addressing. The residents perceived us as such: as representatives of this institutional regime. The vignettes show an explicit contestation of interests, which was initiated not by us, but by the residents, as they questioned our presence and motivations. At this early point in the research, we were not expecting this contestation, nor were we adequately equipped to address it. This may be interpreted as resulting from the conflation of our own agency with that of larger institutions and a general lack of awareness of agency.

Relationality

The ethnographic encounters can be regarded as failed efforts to establish mutually trusted relationships. At the same time, it is through these encounters that these relationships became a core focus of the research: it became clear that reciprocal relations cannot be taken for granted. This includes relationships between researchers and residents, but even more importantly, relationships between institutions – including universities and the municipality – and residents. Whilst we initiated the ethnographic fieldwork with the intention of establishing

relations at a human level, the residents' reaction exposed the institutional dimension. Given our role as university researchers in the LIFE project, we do not only represent our own person, but also the university, the consortium, and by extension, the municipality. It became clear that the residents perceived their relationship with such institutions as asymmetric and extractive. Still, the endeavor to contribute to the local community center in the form of volunteer work was appreciated, and shows a first potential for building trust on a human level. This shows that, in the case of asymmetric institution-citizen relations, trust is best established by initiating an act of giving, of contributing, by the 'more powerful' party.

Scale

As already mentioned, this paper describes a distinct tension between the institutional regime and the local residents and community. The municipal policies which marked Venserpolder as a 'development neighborhood' had led to extensive activity by researchers to investigate local problems, which led to the issue of participation fatigue. It shows how the neighborhood was subject to practices of governmentality. This may also be said for the manner in which Venserpolder was - initially - mobilized in the LIFE project, as an abstract entity disconnected from real lived experiences. Whilst we intended to learn about local community values, practices, and meanings, and to make efforts to better tailor the LIFE project to these, the findings of this paper show that we were unable to gain the insider access to the community that ethnographers typically look for. This can be understood through the lens of dispositional power: besides my role of academic researcher, which creates a sense of distance and difference with the local community, I did not have many informal ties on the basis of which relationships could be built. For example, in the women's gardening initiative I was not only out of place as an academic researcher, but also as a white young man, further complicating my presence there. Similar things may be said about the other community centers, which were all being run by local middle aged women of diverse ethnic and cultural backgrounds. I reflect that I ended up in academic role because of my fit within the institutional regime, not for my fit within this neighbourhood.

Temporality

As discussed in the paper, the findings highlight an interesting disjunction between several conflicting timelines. On the side of the LIFE consortium, there are challenges in integrating multiple temporalities: the long-term agendas of the energy transition, the short-term need to gather empirical data for our project partners, and the medium-term need for the project to deliver results. Then, this assemblage is brought into relation with the complex, nuanced, and distinctly different temporal orientations of Venserpolder residents. In particular, historical experiences of extractive research, unfulfilled promises, and other failed projects were very much alive, present, and relevant to them. The project was very much future-oriented, whereas the residents are more grounded in the present and the past. The following quote, of a resident who described their experience of participating in these kinds of projects, expresses well the disjunction: “[it feels like] putting a post-it on a moving train”. The project already has a direction and momentum, which does not meet the residents in the present moment, and participatory efforts on behalf of the residents do little to change its direction. Whilst this paper identifies these tensions, it does not make any steps towards addressing them.

Abduction

The dimension of abduction is not very relevant in this paper. One place where it is referred to, is in the recommendation to make energy infrastructures and systems experienceable. For many people, energy systems and infrastructures carry no meaning – they are literally meaningless. As a result, researchers like us struggle to convey their importance and motivate people to participate in research. To make energy systems experienceable, would involve to first conceptualize – through design research – how energy transition developments can give rise to new meanings for energy systems, and subsequently, to concretize these meanings in tangible artefacts or environments, so that people can experience these meanings first-hand.

CHAPTER 5

This chapter, named *Design anthropology for ethics of care and emergence: Reflections from an energy transition project* is a conference paper that was presented and published as part of the *Design Research Society Conference*

2024. It was submitted to the track on design ethics, which forms the overarching framing for this particular paper. As such, this paper presents the considerations, judgements, and intentions that we held in the interventions that we conducted. Whilst the Chapter 4 presents the encounters with residents, Chapter 5 focuses more on the internal dynamics of the LIFE project and the ways in which we were (not) able to redirect the project based on the ethnographic findings.

Agency

With the discussion of design ethics, our own value laden agency comes to the forefront, whereas before this was conflated with other agencies. In this paper we focused on the value of care as a key aspect of our agency. In the empirical findings section, we report on the manner in which we exercised agency to attempt and divert the directionality of the project, so that different values and interests would be prioritized. This was a process of value contestation, which took place in diverse project meetings and sessions. In the findings, we discuss various constraints and enablers which affected our agency. Furthermore, as an acknowledgement of uncertainty comes to the forefront in this paper, agency does as well: if the future is uncertain, it means that we can exercise agency to change it, and that we bear a responsibility to do so.

Relationality

The prioritization of care as a value denotes our intention to pay greater attention to the relational dimension of our ethnographic approach. Since our ethnographic fieldwork in Venserpolder harshly exposed the extractive dimension of our research, this paper is the expression of a greater self-consciousness about our positionality and the potential impact we have on those around us. This is expressed in the description of how our actions were enabled and constrained by the interests of our partners. For example, even though we contested the aim of the project to develop a smart energy platform, we met the interests of our 'technical partners' halfway, in order to maintain constructive collaborations. Furthermore, the paper describes how we advocated for a recognition of residents' contributions through financial compensation. This is essentially an effort to initiate a reciprocal relationship. Whilst this is a transactional form of reciprocity, I reflect that this is necessary, because the residents perceive the relationship with institutions as

transactional, and not in their favor. So, a 'positive' transaction is required to repair previous damage, and as a precondition for non-transactional reciprocities may develop on a human-level.

Temporality

With emergence and uncertainty as central themes, temporality comes to the forefront in this paper. This is a response to the messy entanglement of timelines as encountered in 3.1. By drawing focus to the present moment, and how future moments emerge from it in a way that cannot be foreseen, it becomes possible to start to align these diverse temporalities. Furthermore, it enables tracking of power dynamics over time in an evolutionary fashion. This is expressed in this paper as the empirical findings are reported in three subsequent phases. In the first phase, there was the distinct power asymmetry between the community and institutional regime that has been discussed before. In the second phase, we describe how a process of reframing took place, and how this process was constrained by institutional control mechanisms. The tension between control and emergence is quite tangible in this section. The third phase is a future outlook, and describes the tension between the fundamental uncertainty of the kind of research we are engaged in, and the necessity to provide some kind of certainty to residents that their involvement will lead to some kind of outcome.

Scale

Besides the aspects which have already been mentioned, this section elaborates on the distinction between expert and non-expert which can be regarded as an aspect of dispositional power. The expert has a recognized role within the institutional regime, which provides their contribution a particular legitimacy and economic value. On the other hand, non-experts – such as citizens – are by definition located outside of the regime, and their contributions are not valued in the same way. In our exercising of agency, we advocated for a fair compensation of the efforts of local residents, to balance this asymmetry of dispositional power. Further issues are highlighted by the manner in which prevalent regime understandings of energy systems, as well as expectations of the future development of smart energy technologies, shapes actor roles at the local level. There is an overlap here between dispositional and constitutive power, hence it is elaborated below.

Abduction

This paper highlights important issues of constitutive power, by identifying how several concepts and categories carry implications for how diverse actor roles in the energy system are perceived. Terms like 'use cases' and 'large asset owners' are highlighted, where the former denotes a utilitarian view of the project outcome as a 'product-to-be-used', and the latter indicates how project stakeholders were understood in terms of their energy asset ownership. Such framings carry an intrinsic inequality between those who do, and do not, own energy assets – citizens without assets are not perceived as 'valuable' under such framings. Whilst designers can reframe such terms through design abduction, this activity is constrained by the fact such categories are recognized within the institutional regime, and reframing efforts might undermine the legitimacy and fit of this local project within the regime. Still, one key development is that the outcome of the project was reframed from 'smart energy platform' to 'energy community'. Both of these terms are abstractions which imply different kinds of social relations and actor roles, with the latter providing more openness for local residents to embed their own values, meanings and practices.



4

LOCAL FRICTIONS IN THE ENERGY TRANSITION

Design Anthropology for the Emergence of Energy
Communities

Working in an interdisciplinary consortium aiming to design an innovative smart energy system in Amsterdam, we report on frictions encountered in ethnographic fieldwork.² These frictions pertain to the invisibility of energy infrastructure and the resulting lack of a relatable narrative, people's past experiences with public participation in the energy transition, and conflicting time horizons of long-term policy goals with people's short-term concerns. We reflect on the starting assumptions of the project in which this study is embedded, noting how the typical techno-economic framing of renewable energy projects inhibited the building of social connections and rapport within our fieldwork. Using a design anthropology

² This article was published as part of the *Ethnographic Praxis in Industry Conference (EPIC) 2023*, as (van Leeuwen & Singh, 2023)

approach, we describe how ethnographers can support the emergence of local energy communities and identify future directions to address the frictions identified. These directions include making energy systems more socially experienceable, design anthropologists mediating between people and institutions, and embedding ethnographic engagements in institutional structures to ensure continuity.

4.1 Introduction

By reporting on ongoing ethnographic fieldwork that we consider challenging and of limited success, this paper describes three frictions associated with the transition from fossil to renewable energy sources in The Netherlands, i.e., the Dutch energy transition. The authors collaborate in an ongoing energy innovation project in Amsterdam Southeast, where the goal is to develop a “smart energy platform” that inclusively benefits the local community. Working in an interdisciplinary consortium with various partners, including electrical engineers, municipal representatives and the operator of the local electricity grid, our initial role was to design the user-facing part of the system using a human-centered design approach. In the paper, we describe the difficulties encountered during fieldwork in a diverse neighborhood with numerous socio-economic challenges, prevalent distrust towards institutions, and an ‘overstudied’ local population, leading us to question this initial assumption. From our experiences in the field, we generalize and identify three frictions for ethnographers working in energy transition projects.

The municipality of Amsterdam has set an ambitious target for a 55% CO₂ emissions reduction in 2030 (Municipality of Amsterdam 2020). This ambition is not without challenges, as energy poverty (defined as the lack of affordable and reliable access to energy supply and services) figures are rising (Municipality of Amsterdam 2022), and congestion in the electrical grid is threatening the reliable delivery of power in the future. The authors’ project has a dual purpose of addressing these challenges: firstly, to develop a smart, digital platform to incentivize local energy users to change their behavior to reduce congestion, and secondly, to ensure that the energy platform benefits residents in a local neighborhood in an inclusive manner, prioritizing the needs of marginalized and oft-overlooked social groups.

From the beginning, the authors brought a design anthropology approach to this project, intending to build trust and learn about local residents' needs to inform the design of the smart energy platform. As will become evident, the fieldwork revealed flawed assumptions within the project's approach, which reflect more significant and systemic frictions for the energy transition. We position these findings in a growing body of literature that explores the relevance of ethnography for energy studies and identifies future directions for ethnographers to address the frictions identified.

The first friction pertains to the lack of a relatable narrative around the social relevance of energy systems, resulting from the invisibility of energy infrastructure. Previous studies have explored aspects like the multisensory experience of domestic energy practices (Pink, 2012) or storytelling around energy systems (Moezzi, Janda, and Rotmann 2017), but we argue that the novel social relations that renewable energy systems enable should also be made experienceable. The second friction pertains to people's past experiences with public participation in the energy transition, which has led to an erosion of trust. Whilst ethnography is well positioned to understand and uncover people's judgments about past energy projects (Smith and High 2017), we argue that ethnographers should become active mediators and translators between people and institutions during the lengthy process of energy system innovation. Finally, we describe the frictions in the temporal mismatch between the long-term energy transition and short-term concerns of people. We argue that ethnographers should work to embed ethnographic engagements (Goodman 2018) in the functioning of local organizations to ensure continuity of collaborations beyond a single project whilst regularly making intermediate results of the long-term innovation process tangible and visible to participants.

4.2 Context: Energy Prosumers and Smart Grids

The energy sector is highly technocratic, characterized by organizations and institutions invisible to the general public, who work to maintain the infrastructures that keep modern society running. In particular, the electricity grid is an esoteric architecture that is unintelligible to the average citizen, functioning through technical protocols operated by specialists in invisible control rooms using complex mathematical operations. However, research

suggests this may change as more households install residential solar panels, own electric vehicles, and organize with their neighbors in energy communities or cooperatives (Koirala et al. 2016). Citizens will transform from passive energy consumers to pro-active prosumers who both produce and consume energy, actively participate and trade on local energy markets, and adapt their energy practices based on techniques such as demand side response and dynamic energy tariffs (Calver and Simcock 2021). These changes are required to adapt to the dispersed and intermittent generation of renewable energy, which, unlike fossil fuel power plants, is distributed throughout the landscape and is uncontrollably dependent on weather conditions.

Furthermore, the electricity infrastructure itself is expected to undergo a fundamental transformation into a 'smart grid', using intelligent control mechanisms, weather forecasting algorithms, and digital platforms (Farhangi 2010). The social implications of these developments are yet underexplored, as people might have to adapt their domestic energy use patterns, use new technological innovations, and interact with novel organizations that take up new roles in so-called "smart local energy systems" (Ford et al. 2021). An increasing amount of research focuses on designing the user interaction with these systems, e.g., through smart meters or home energy management systems (Geelen, Reinders, and Keyson 2013).

The project in which we work is motivated by these developments, with the primary goal of designing an innovative smart energy platform. This platform would incentivize users to adapt their energy use patterns to alleviate the load on the local grid in return for financial compensation from the grid operator. Many of the project's partners and collaborators work to build the software and hardware required, with expected users being several large commercial parties with ownership over various energy assets (e.g., storage batteries and solar panels) and households from a local neighborhood. Besides technological development, there is also the question of social inclusion, which concerns the benefits for those households with the greatest need. Initially, it was assumed that those households might use the platform to make better use of their residential solar energy and potentially engage in practices like Peer-to-Peer (P2P) energy trading.

The households affected by the project are from a local neighborhood in Amsterdam Southeast, a field site for our project. It is an incredibly diverse area, with around 70% of residents from a non-Western migration background. It also

has considerable socioeconomic challenges, including energy poverty, little local economic activity, and a need for more social cohesion. The municipality of Amsterdam designated the area as a 'development neighborhood', signifying that the area needs extra attention from policymakers. We reflect that whilst it is important to report these, this can also have a stigmatizing effect on the residents.

The authors worked on the social inclusion side of the project, intending to learn about the needs of residents and formulate design requirements for the platform. From the beginning, there was a perceived gap between the smart energy platform and the likely needs of households, and the plan was to conduct early ethnographic field visits so that the findings might inform the engineering work, which was likely to proceed with or without the outcomes of our research. At the start, the project's technological, rationalist-economic framing was heavily emphasized compared to the social dimension. To be able to provide a counterweight and input to these activities, our ethnographic fieldwork started with several intentions and assumptions:

- 1) to take the social needs, concerns, and values of citizens as a starting point, rather than the technology,
- 2) to avoid technical jargon as much as possible, and
- 3) to start with a focus on building rapport with local community centers and community leaders before focusing on the core research questions.

As the ethnographic vignettes in the next section will show, even these seemingly typical starts for ethnography proved to be arduous and intricate.

4.3 Three Vignettes of Failure

4.3.1 Urban Gardening

The first place I visited ("1", used in the vignettes, refers to the first author of the paper) was an urban gardening initiative that tailors specifically to local women and has the purpose of women's empowerment. The organization that manages the initiative operates multiple gardens in Amsterdam and is well known because of a documentary filmed about them some years ago. It seemed like a natural place to start, as people interested in gardening and greenery might have some affinity with the theme of sustainability, and thus also renewable

energy. Several times a week, they organize a morning or afternoon where any local women can come to volunteer in the gardens, assisted by a garden coach who, in the process, helps women to find their personal power. Besides the potential connection with sustainability, their focus on empowering women from diverse cultural backgrounds aligned well with our interest in inclusivity, as there would be plenty of people to talk to who are not the 'usual suspects' in energy transition projects, i.e., older white Dutch men.

I decided to visit the garden on a Wednesday morning, which was open for volunteers to help. I was somewhat uncertain about my visit, as the place seemed intimate, and as a non-local male, I would certainly stand out and perhaps be unwelcome. Still, no women were in our research team, and we had to start somewhere. When I arrived at the garden, however, which was located in the courtyard of one of the characteristic, large apartment blocks, I was swiftly and warmly welcomed by the garden coach, who assured me that 'everyone was welcome'. She asked me why I was here and where I was from, as I was clearly not local. I explained that I was doing a research project related to energy and sustainability and that I was looking to speak to some people to learn more about the neighborhood, especially if there is anyone interested in renewable energy. The coach seemed a little unsure how to react. She was okay with it but didn't ask any more questions. I felt that the fact I was a researcher created some distance between us, and it certainly did not serve to have more conversation. Still, she welcomed me to participate in the garden and help with their activities.

I worked in the garden for a few hours and interacted with the people there, mostly middle-aged women from Surinamese and other ethnic and cultural backgrounds. It was a warm environment of casual chit-chat and friendly banter - the Dutch word "gezellig" captures the atmosphere well. It did not seem appropriate to strike up a difficult conversation about research about energy transition or even ask them about other prevalent concerns in the area. Whilst it was a pleasant atmosphere and people made me feel at home, there was pressure on my mind to get the data and talk to people about energy. After all, I was not there for casual chit-chat but in my professional role of contributing to designing a smart energy platform. Still, ethnography takes time, and overall, it was a pleasant visit.

During another visit, I was having a cup of coffee with the group and met the founder of the initiative, who was curious to learn more about our research

and purpose in the neighborhood. I explained that I was connected to the university, working on a research project in the area related to energy and inclusiveness. She was interested to in getting the details, so I explained about the smart energy platform that is developed nearby and how we were conducting ethnographic research to explore how this platform could serve the needs and interests of local citizens in an inclusive way. We were looking to get to know some people in the area, especially anyone interested in renewable energy, and I'd like to volunteer in the garden as a means of doing research and learning more about the area. The founder seemed hesitant and said there probably wasn't much to learn about energy from the people here. She further explained how researchers or students were visiting the area quite frequently. She asked me to email her with more information, and then she'd let us know.

We had some email exchanges, and a few weeks later, she communicated her decision: She would prefer us not to conduct our research in the garden, as it was intended to be a safe space for women. She didn't want anyone around who would be observing or studying people. Also, the fact that they have received quite a bit of public attention recently because of the documentary means that they must be quite selective in who they speak to. While she did not say it explicitly, we felt a mismatch between our interests and their activities: urban gardening is about social connection and participation within the local community, whereas our energy project was framed technically and informed by national and global concerns. The only connecting point is the intention of 'inclusivity', but there was no concrete idea of implementing this besides "we'd like to study and learn". Moreover, as a non-local male university researcher, I was somewhat out of place for an initiative focused on local women. If they get many requests from researchers and students to participate, then probably there'd be others with more relevant topics or who have more of a personal connection to the place.

4.3.2 Homework Supervision

Another place we'd learned about is a local community center that organizes homework supervision, other activities for local youth, and food bank services for homeless or unregistered people. We found various articles about them online and saw an interview with the founder on local television, who was considered a hero for the local community. It seemed like this place was central

in some local, informal networks and that they knew a lot about the needs of people who were struggling to make ends meet. One afternoon, I visited the place and spoke to a woman I recognized as the founder who was interviewed on local television. I mentioned I was working on a research project and looking to learn more about the area and also about this particular initiative. She said: "oh I received a call from a student who wanted to visit us, is that you?" I said that that's not me. But it was striking that another student had contacted them to visit them at this same time.

She told me about their activities, about how they host after-school activities for kids, how the place is a second home for the children, and that many volunteers help her to do this: it's a real community place. She said they were a very central and trusted place for the people in the neighborhood. I mentioned that I was "working on a research project related to energy and exploring how the energy transition can connect more to the needs of people in this neighborhood and potentially help people dealing with energy poverty". She seemed appreciative but gave a neutral reaction, neither positive nor negative, and wished me good luck. Although the topic did not spark her interest, I felt that it could help that we wished to explore the needs of people dealing with energy poverty. I asked if I could visit them later if I had more questions, to which she said their door was always open. We exchanged contact details.

Later, I sent an email to ask if they needed help with anything mentioning that as part of doing our research, a graduate student and I would like to do volunteer work to give something back to the neighborhood. This way we could get started and get to know people. We got a positive reaction and were invited for a conversation. We spoke with several women who were in charge of the place, who were middle-aged and from various ethnic backgrounds, and they said they were happy with our proposal and explained that they could use help with homework supervision. They were curious to learn more about our research, and one of the women inquired: "how are you ever going to make the energy transition more inclusive?" She said it is a very difficult topic, and people don't know anything about it. She herself had just started looking into solar panels - the energy prices were very high as the Ukraine war just broke out - but most people are unaware of how to approach this or even start. We explained that our first step was to learn from residents' viewpoints, what they care about and need in this regard, and that we wanted to explore ways of making the topic more engaging and accessible.

They explained they were also working with a research team from another university to develop a 'wellness tracker' for the neighborhood. This tool measures the level of well-being of the residents in terms and criteria that they find important. They explained that the wellness tracker project contributed to building social relations for the neighborhood, with the final outcome being interesting for anyone living in the area. We talked some more, and they said we could explore together how our project could also provide value like this. Still, they were skeptical about the 'smart energy platform' our project was developing: "if some old white guys come here 'to do energy transition,' it will generate a lot of distrust.", is the literal quote. They said clearly: "if you want to do research here, it has to bring something to the neighborhood". They also said that much research has been done in this area into issues like energy poverty, and people have become tired of talking to researchers about the problems they deal with daily. "We, and the municipality, know well enough what the problems are, we don't need more research. We need real solutions now."

Despite these doubts, they still welcomed our help with homework supervision, which we participated in a few weeks later. Unfortunately, the week afterward, the roof of the community center building collapsed, and homework supervision was suspended indefinitely, meaning we couldn't visit anymore. Reflecting on these visits, we were thinking: what do we offer this community? The wellness tracker they are developing with the other researchers is something tangible and interesting to anyone living in the neighborhood. At the same time, the smart energy platform from our project is something complex and technical, and the initial framing was aimed at people with at least access to solar panels, which we had learned were not even present in this area. How could this ever be made inclusive and interesting? Of course, we could hold a workshop or co-creation session on a theme like saving energy and providing a meal or gift card to participants, but this would not actually help to make the smart energy platform that we were developing inclusive while there is public funding going into this project for that specific purpose. While we had more email contact with this community center, our collaboration never fully got off the ground. We felt this was largely because of our project's perceived lack of usefulness and relevance to the local community.

4.3.3 Coffee Hour

The third community center I visited organized various events for the community, including coffee hour, yoga, bible reading for children, and more. Together with a graduate student, I decided to visit during one of the coffee hours on a Thursday morning, assuming it was open for anyone to visit - the available information suggested as much. We arrived at the place, a bit nervous from the previous experiences and unsure what the best approach would be, but we hoped to strike up a conversation with whoever was there. We decided to be very sparing with information and details about our research unless people asked for it, and we would try to listen and show interest in the people who were present. When we arrived, we did not see anyone at the entrance and were unsure how to proceed. We decided to enter and cautiously went down the hallway, looking for someone to speak to. Not seeing anyone, we proceeded and entered a large room where the coffee hour was happening. About 15-20 people sat around the room, keeping social distance according to the COVID-19 regulations that were still in place. Mostly, they were middle-aged and elderly women of various ethnic backgrounds engaged in conversation.

We approached one woman who was pouring coffee and seemed to be in charge. We mentioned we were involved in a research project and wanted to learn more about the neighborhood, and we asked if we could sit down and hang around. Beforehand, we had explicitly decided not to mention energy transition right away as it hadn't been a very successful topic to talk to people about. She seemed unsure and suspicious and asked what our research was about, to which we explained that "we were curious to learn how local residents think about renewable energy," especially concerns related to the high energy prices at the moment. This did not satisfy her, and she asked very pointed and specific questions: "OK, but which organization are you connected to? How is this project funded?" We explained that we were connected to a larger research project that was related to the congestion of the electricity grid and that we were exploring how it could be done in an inclusive way. She seemed hesitant but said: "okay, you can sit down and listen, but don't expect people to want to talk about energy."

We sat down on one of the benches off the side. Because of the social distancing setup, we could not speak with many people, except one elderly lady who started chatting immediately with one of us. The other ethnographer sat somewhat awkwardly off the side of the bench, unable to join the conversation

and out of speaking distance of anyone else, and so simply hung out and listened to what people were talking about. This continued for some minutes until a lady at the other side of the room exclaimed: "Who are these people, and why are they here? They didn't even introduce themselves!" She yelled quite loudly, and this caused some upheaval. Some others said, "it's okay, everyone is welcome." We hastily stood up, introduced ourselves, and mentioned why we were here. This calmed people down, but there was still tension in the room. We were unsure what to do from here, if we were welcome or not. After a few minutes, we decided to leave - we said goodbye, thanks for letting us in, and that we would leave now. Overall, we felt that our presence was intrusive, and we were not familiar with the social norms and what would be expected of us. It seemed like a more private space than we expected, and to talk about anything formal or impersonal felt wrong and off, yet we still had to do this to explain who we were, what we were doing, and why we were there.

After we left the place, a woman came running after us and urged us to wait. We had not seen her inside before. She told us she was the organizer, and very quickly apologized and said everyone was welcome. She explained she hadn't seen us come in; usually, she was at the entrance to welcome people, but she was away for a few minutes. She emphasized that we were always welcome and could always contact her and wished us the best of luck in our research. She reassured us, but we still realized that we had not found the right approach to speak to people. We felt that we lacked an explanation, story, or narrative about the activities and intentions of our project in meaningful human language instead of technical jargon to explain why we were in this area and what we wanted to learn from people.

4.4 Frictions for Ethnography in the Energy Transition

This section highlights frictions for research and innovation in renewable energy - particularly for emerging smart energy systems. Moving beyond the specific aspects of our case, we interpret the general implications of these findings, connecting them to literature and theory.

Friction 1: The Invisibility Of Energy Infrastructure And Lack Of A Relatable Narrative

The vignettes illustrate the lack of a meaningful explanation about the nature and relevance of the smart energy project, which meant that our presence and interest had to be explained in technical jargon that was far removed from the daily lives of our participants. The story of the energy transition is one of rising CO₂ levels, technological innovation, and complex bottlenecks like grid congestion. The vignettes illustrate how this framing had little effect on the building of rapport or even inhibited it. Terms like 'energy transition', 'smart energy platform', and 'grid congestion' did not serve the purpose of making connections and building rapport, yet were indispensable in explaining our presence. We argue that this is because of people's traditional role as passive energy consumers, leaving the management of the system to technocratic organizations and experts. In general, people do not experience energy infrastructures as part of their social environment, apart from engaging in energy consumption within households, resulting in a lack of human-centered understanding of the functioning of the energy infrastructures.

Various academic studies have pointed out how the invisibility of energy infrastructure contributes to a lack of awareness around sustainable energy use and proactive engagement with energy practices (Pink 2012; Broms, Wangel, and Andersson 2017). Making these processes more visible, tangible, and meaningful is commonly seen as a necessary step in raising awareness and promoting sustainable behavior – e.g., through storytelling (Moezzi, Janda, and Rotmann 2017). This step is even more important considering that energy infrastructures are closely intertwined with institutions of governance and processes of political power (Boyer 2014) and can be mobilized to produce new forms of citizenship (Larkin 2013). Meaningfully opening up the black box of energy infrastructures is thus important not only for promoting sustainable behavior but also for enabling democratic accountability and creating insight into the social relations that energy infrastructures enable. This latter aspect is even more true for emerging smart energy systems, which can enable new forms of community organization and social engagements.

Our findings show the lack of a relatable narrative around the relevance of innovative renewable energy systems that connect with the lived experience of people. This forms a barrier not only towards spreading awareness of sustainable behavior but also the emergence of new forms of community

organization and social relations around smart energy systems. Our findings problematize the common assumption that people are interested in co-shaping their future role as 'proactive energy citizens' and show a 'chicken-and-egg' problem: the goal is to design an energy system in a way that is meaningful, tangible, and sociable to members of the most difficult-to-reach social groups, but to do so, the purpose of our research should be explained in a manner that is meaningful, tangible, and sociable to the participants.

Friction 2: Past Experiences of Public Participation In The Energy Transition

The second friction relates to how participatory projects in the energy transition are often organized and how citizens perceive the value of this participation. In a context like The Netherlands (but also in other places), there is a history of public participation in the energy transition, typically organized top-down. An example is the placement of wind turbines, where the municipality invites the local community to co-decide on a location. Too often, people have felt that their concerns were not sufficiently heard and considered, leading to a certain "participation fatigue", as one of our participants expressed. Another person reported that the experience felt like "putting a post-it on a moving train". In other words, people felt that the outcomes and direction of certain projects were already pre-determined by institutional officials, with limited space for real input from citizens. These concerns are well known and identified in academic literature, e.g., through analyses of how the 'public' is conceived, imagined, and constructed in a participatory process, thereby structuring the interactions and engagements in a certain way (Sovacool et al. 2020; Chilvers and Longhurst 2016). While the intention may be to enable citizens to participate in institutional decision-making meaningfully, real delegation of power is not guaranteed (Arnstein 1969).

During our fieldwork, we experienced how the energy transition is associated with troublesome projects in the past. When we mentioned our work in the energy transition to one man on the street, he exclaimed, "Ugh, don't start to tell me about it!" and proceeded to describe how the municipality retrofitted his apartment building with a new heating system, which led to higher energy bills - whereas the opposite was promised. This association hampered our ability to blend in and build relations, as people did not trust that participating in our energy-related research would lead to any useful or interesting outcomes.

Initially, we hoped that our ethnographic approach would avoid some of the problems associated with the more traditional approach. As it turned out, the participation fatigue of people in this area pertained not only to projects initiated by the government but also to the presence of researchers and universities – a novel finding. One person expressed to us the concern that frequently researchers have come “to ask people about their poverty,” which is a stigmatizing frame. Another response was, “so much research has been done on the problems, people are tired of talking about it. What we need now are solutions”. It thus became clear that people in this area have been asked the same question multiple times, over and over, by different researchers, students, or professionals working at different institutions, unaware of each other’s activities. It struck us that many people we spoke to were familiar with researchers visiting, which had resulted in skepticism regarding their activities and intentions.

We interpret this as an experienced lack of reciprocity, where researchers come into the area to gather data to advance their research and meet their institutional requirements without ‘giving back’ to the community. In this way, well-intentioned research can result in a form of *data extractivism*. We reflect that it is important for ethnographers to consider their embeddedness in institutional structures and activities and what purpose their activities serve. In our project, while as ethnographers we work for real and meaningful involvement of people, the institutional structure merely requires a justification of the requirement of inclusiveness, and pushes to do this as efficiently as possible. As ethnographers, we still deal with this fundamental tension where research or participatory processes are initiated from the top down. We are accountable to the institutional structures within which we operate, which tend to depoliticize controversies and operate in a technocratic manner (Turnhout et al. 2020). These institutional interests might be only partly congruent, or even adverse, to those of the people we engage with in our fieldwork.

Friction 3: Temporal Mismatch In Energy Infrastructure Innovation

The third friction concerns the tension between three different, conflicting time horizons that play out in our research: 1) the tempo of long-term energy transition innovation, a more or less linear process stretching several decades into the future; 2) the procedural, technocratic organization of multi-year R&D projects through deadlines and deliverables; 3) the daily, weekly, monthly

routines of the average person. We argue that these need to be adequately attuned – participatory and ethnographic engagements should stretch beyond the scope of a single project, and people should be able to meet their short-term needs while participating in long-running projects.

Starting with the first time horizon, policy goals of CO₂ reduction for 2030 and 2050 create the need for a long-term perspective yet urgent initiation of innovation in infrastructural solutions. This means that results from current research might only become concrete and tangible many years from now. This long-term perspective fits well with a practice of slow ethnography and organic building of connections, in contrast with the common necessity to conduct short field trips and deliver quick, actionable results. During this research, however, we experienced how the time horizon of our project still created the urgency to engage residents early to meet deadlines and match the pace of the engineering work.

As mentioned, our fieldwork was conducted in an interdisciplinary innovation project, with designer-anthropologists working with electrical engineers, civil servants, and social scientists. It was emphasized in the beginning that any relevant user-related insights would have to come quickly and early since much of the ‘design’ of the smart energy platform was already laid out, and construction of the relevant hardware and software components had to begin as soon as possible. The engineering work could not afford to wait many months for the ethnographic fieldwork to unfold slowly and organically and yield relevant data. This is surely recognizable for ethnographers working in industry or other contexts. However, we argue that the need for a long-term perspective and a slow approach is especially important in energy transition work. Since energy transition projects take a long time to implement, are often bound to a single location, and are a locus of political controversies, the risks are higher that social relations between citizens and institutions are damaged permanently, more so than in commercial product development. We argue that an ethnographic engagement in a particular area should stretch well beyond the scope of a single project and attune to the lengthy process of transforming the local energy system and infrastructure.

Another tension concerns the mismatch between this long-time horizon and the work routines and rhythms of the average person. When initiating an ethnographic engagement around a specific energy system, a significant challenge concerns articulating the relevance, nature, and impact of something

that will not exist for a long time. This further underscores the need for a relatable narrative, as in the first friction, and the prioritization of reciprocal relations, as in the second friction. From our fieldwork, several participants responded how they do not have the time to invest in our research, using phrasings like “no time to worry about this”, or “too busy with getting food on the table”.

4.5 Design Anthropology for the Emergence of Energy Communities

Building on the frictions described above, this section elaborates on potential pathways for mitigating them. We do this by elaborating on our design anthropology approach, exploring how ethnographers, researchers, or other professionals could intervene and work for structural solutions to these frictions. We briefly introduce our interventionist approach, describe how we facilitate the emergence of a local energy community in our research area, and interpret how this can address the frictions identified.

Our design anthropology approach is characterized by an intentional and reflexive stance concerning intervention. We believe ethnographers cannot be a fly on the wall, observing and mingling with their research participants without co-shaping the situation and events. Seen in this light, ethnography is also an intervention, especially in non-public spaces such as those visited during this project. Besides participatory ethnography, designer anthropologists use design interventions to conduct experiments and obtain an understanding of emerging sociocultural phenomena (Singh et al. 2021). Approaching these interventions with a reflexive attitude, a core principle guiding our approach is to consider “the moral implications of intervention” (Murphy 2016). Both ethnography and other design interventions are enacted with a certain intentionality and by a certain design, with certain potential outcomes in mind. An intervention is a means of ‘giving form’ (Murphy, 2021) to a context, thereby co-shaping how the rightness or wrongness of an action is considered. Our findings show how our ethnographic visits (i.e., the interventions) give rise to questions about the right- or wrongness of the visits themselves, the legitimacy of our presence in non-public spaces, the assumptions and purposes of our project, and reciprocity between ethnographers and research participants. An interventionist approach is bound to magnify and produce frictions and tensions, but we argue that

ethnographers should take ownership of their interventions and the resulting consequences.

In the context of energy transitions, a key question becomes: what should be the role of top-down actors, if any, to intervene in local contexts to support, facilitate, or push the idea of an energy community? Energy communities are a recognized energy system entity in European Union policy. They can be loosely defined as citizen or community initiatives that adopt collective ownership and management over local renewable energy assets or systems. While energy communities are typically characterized by bottom-up actions and initiatives from citizens (Bauwens et al. 2022), the imperative of a just energy transition means that institutional guidance and involvement might be necessary. After all, bottom-up initiatives are not getting off the ground in areas like the neighborhood of our fieldwork, even though they are seen as a key avenue for residents and communities to participate and benefit.

We argue that a middle-of-the-way approach, where ethnographers enter a local context to establish long-term partnerships with citizens, provides added value. This includes not only relations between ethnographers and their informants but also ethnographers working as mediators and translators to establish relations between citizens and institutions. The slow building of rapport, the organic unfolding of social networks and connections while learning about the prevalent local customs and concerns, and reflecting on one's approach and embeddedness in the institutional context ameliorates the risks associated with either fully bottom-up or top-down action. Building social connections through informal engagements can subvert the coldness, impersonal nature, and rigidity of traditional, top-down, institutionalized participation. On the other hand, citizens or communities in underprivileged contexts stand to benefit from the support that collaboration with professional organizations can provide.

To implement this in our research, we are collaborating with a local organization that represents local residents and supports local energy initiatives. Through this organization, which is part of our project consortium, we are connecting to a select group of interested local residents engaged with the energy transition topic. In a series of co-creative brainstorming sessions, we are exploring with these residents if, how, and under what conditions a local energy community could be established. Among other things, this community would take ownership of installing solar panels on the local apartment buildings and

ensure a fair distribution of the benefits for all residents. While it is the intention that the local community will fully take ownership and responsibility, our role is to provide practical support by organizing co-creation sessions, providing pointers for discussion, and assisting in formalizing the idea. This would allow us to build long-term partnerships between us, local organizations, the newly founded energy community, and externally partnered institutions. The local organization can become an opportunity to explore citizen ethnography (Badami and Goodman 2021). While the initiative was started from the top-down, it appears as a promising avenue for a local energy community to emerge in a place where it otherwise would not have.

This pertains to another key concept in our design anthropology approach - emergence. There is a creative tension between the future orientation of design and the anthropological interest in understanding the past and present (Otto and Smith 2013; Singh 2019). Design anthropology has the conceptual tools to study empirical sociocultural phenomena and consider what kind of future social and material arrangements are emerging in a dialectical manner. This could include the emergence of new types of energy communities through the collaboration between ethnographers and residents. Such collaborations would ideally serve various purposes: supporting citizen-led energy initiatives, contributing to a just energy transition, and generating transformative academic knowledge through action (Otto and Smith 2013; Singh et al. 2021). Design anthropology as an approach seems well-positioned to contribute to these purposes.

Finally, we provide several concrete pointers and directions for how our proposed design anthropology approach can address the three frictions identified. While we only briefly indicate these directions, we intend to explore these in-depth in our future research.

1. The Invisibility Of Energy Infrastructure And Lack Of A Relatable Narrative

Designer anthropologists can conduct interventions to make invisible energy systems more tangible. Through design experiments and ethnographic fieldwork, in a similar fashion as (Pink et al. 2020), the meanings that people associate with renewable energy systems may be studied and mobilized to reframe techno-economic understandings of smart renewable energy systems. By supporting and collaborating with residents to establish an energy

community, designer anthropologists may pay attention to what tensions, frictions, and controversies are emerging to explore how the social dimension of energy systems may be made tangible and experienceable through design interventions.

2. Past Experiences Of Public Participation In The Energy Transition

Ethnography as a means of building informal connections and trust is better positioned than traditional top-down participatory methods in the energy transition. Still, to deal with our challenges, the issue of reciprocity and the value of participation should become an even greater priority for ethnographers. To this end, it might be necessary for ethnographers to become more activist and intervene not only in the local context but within the institutional context itself (Levin 2019). Ethnographers should become mediators and translators on behalf of people and sensitize institutional structures and officials to their needs and perspectives. This could involve advocating monetary compensation for participants to enable them to collaborate with professionals on equal grounds. By contributing to building long-term partnerships, ethnographic practice can become embedded in local organizations.

3. Temporal Mismatch Of Energy Infrastructure Innovation

Renewable energy innovation initiatives aiming to involve citizens for the long term should ensure continuity of social relations and collaborations, taking an infrastructural perspective (Mendonca 2022). As indicated above, it might be necessary for designer anthropologists to become more activist and intervene within the institutional context to advocate for structural changes. Such structural changes include institutionalizing the need for slow ethnography and embedding ethnographic relations in local organizations. Furthermore, to cater to the short-term needs of the average person, it is crucial to provide regular updates, outputs, and results of the innovation process in a meaningful and understandable form for the common public. This fosters a sense of progression, which is crucial to retain support and engagement for the long term.

4.6 Conclusion

Smart energy systems are expected to play an essential role in energy transitions. However, our ethnographic fieldwork shows how the framing and understanding of these innovations constitute a barrier for people – not only to adopting new energy technologies but also to their participation in ethnographic research. Our findings show the necessity for ethnographers to reflect on the institutional structures within which they operate and how ethnographic engagements enact not only the encounter between two people but also between institutions and citizens. We highlight the lack of relatable narratives and socially experienceable implications of smart energy systems, the perceived lack of value of public participation in the energy transition, and the conflicting temporalities of long-term innovation and present needs. Using a design anthropology approach, we highlight how ethnographers can mediate between institutions and local groups to support the emergence of energy communities. We argue that ethnographers working in energy transitions should advocate for embedding ethnographic practice in local organizations to ensure continuity of social relations and collaborations, acting as mediators and translators in the process.

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5

DESIGN ANTHROPOLOGY FOR ETHICS OF CARE AND EMERGENCE

Reflections from an Energy Transition Project

This paper³ describes a design anthropology approach toward design ethics, which understands design ethics in a relational and emergent manner. We characterize how ethical issues and judgments emerge from the continuous stream of social interactions, collaborations, and relations that constitute the design process. The approach recognizes that there is a fundamental uncertainty in how social engagements and associated ethical issues in a design process unfold. Design anthropology aims to remain open to such emergent understandings, and fosters a sense of empathy and practice of care towards collaborators. The approach is illustrated by reflecting on empirical findings from an interdisciplinary energy transition project in Amsterdam Southeast. The findings show how unexpected ethical issues emerged in the design process that challenged the authors to navigate, with care and empathy, between the opposing needs of project collaborators.

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5.1 Introduction

This paper conceptualizes design ethics as inherent to the design process, and how ethics emerge from the totality of informal interactions, social relations, and collaborations that the design process consists of. Responding to the call to consider design ethics as an invitation to care (Ozkaramanli et al., 2022), the approach fosters a sense of empathy towards all collaborators, and interprets what ethical issues emerge from conflicting stakeholder needs. The approach presented is based on design anthropology which brings a novel perspective to design ethics. In its crossing of disciplinary boundaries and engagement with non-experts, design anthropology is similar to participatory design – but it also goes further. Where participatory design focuses on specific methods for organizing engagements with prospective users or other non-experts, design anthropology studies the entirety of informal interactions, daily conversations, and social relations between collaborators (Otto & Smith, 2013).

Using ethnography as a core method, the normative commitments of designer-anthropologists (Singh et al., 2021) pertain to social engagements in the design process, broadly understood. One such commitment is to respect the agency of collaborators—including designers, non-design experts, and non-expert participants—in shaping design outcomes. To do so, fostering openness and curiosity about diverse worldviews and ways of being is important. The approach developed in this paper holds that, on the one hand, ethical reasonings and judgments are ‘situated’ as they emerge from ethnographic engagements and design interventions. At the same time, design anthropology has an ethical agenda of its own, which is to care for the needs and interests of collaborators and to face uncertainty by being open to the emergence of unexpected ethical issues and associated reasonings (Drazin, 2020; Akama et al., 2018). This design anthropology perspective on design ethics is elaborated in Section 5.2.

We illustrate the design anthropology approach using reflections from an interdisciplinary research project in the context of the local energy transition in Amsterdam Southeast. Section 5.3 describes the project and its context: an underprivileged neighborhood where residents deal with interconnected socioeconomic challenges. In Section 5.4, we reflect on how the design process unfolded in our project, highlighting how initial project goals and framings predetermined the remainder of the process to a significant degree and how emerging ethical issues could only be addressed to a limited extent midway

through because of institutional and structural constraints. Section 5.4 shows how we, as designer-anthropologists, must dialectically navigate opposing needs and interests in the design process. On the one hand, a sense of care towards people we met during ethnographic fieldwork required that we challenge prevalent discourses within our project. At the same time, meeting our project partners halfway was necessary to maintain productive collaborations. The paper illustrates how unexpected ethical issues emerged and the possibilities, challenges, and uncertainties for such issues in the design process.

5.2 Design Anthropology for Ethics of Care and Emergence

This section builds upon the existing perspectives on design ethics and design anthropology to outline design ethics of care and emergence. Starting with the notion that design ethics are integral to the entire design process, Devon and Van de Poel (2004) make this argument as part of their 'social ethics' paradigm for design ethics. They argue that design ethics are part of many decisions - large and small, explicit and implicit - made throughout the design process in dividing tasks, assigning responsibilities, and engaging stakeholders. They argue that if this process is conducted ethically, it will lead to ethical design outcomes. The ethical considerations concern social arrangements and institutional structures that shape the design process, including project management procedures, corporate policy, and legislation. This focus on social context and dynamics appears to be aligned with how designers make ethical judgments in practice, which is highly pragmatic (Lindberg et al., 2021). Such a situated and context-sensitive understanding of design ethics is distinctly different from traditional understandings of ethics, which often concern how universal principles may guide the actions of individuals (Mitcham & Duval, 1999). The relationship between individual conduct and shared social norms and structures can be highlighted by considering the difference between ethics and morality. If ethics concerns a general philosophical inquiry into what constitutes a 'good' way to live, morality pertains to the constraining social norms that characterize a particular context (Chan, 2018). For designers and design researchers who work in a particular sociocultural context - for example, in ethnographic fieldwork - design ethics involve reflecting, questioning, and re-evaluating prevalent moral norms and ideas in the given context (Müller, 2020).

While Devon and Van de Poel (2004) discuss design ethics in the context of engineering design, participatory design calls for a different or additional set of normative considerations. Participatory design involves a higher degree of interdisciplinarity, a consideration of more diverse worldviews, and a more direct and intensive engagement between designers and publics (Björgvinsson et al., 2010; Dantec & DiSalvo, 2013). A normative principle that motivates participatory design is that those affected by a design should have a say in it. Compared to engineering design, a participatory design process focuses on specific methods and procedures to enable non-experts to participate so that designers may learn in-depth about their needs and perspectives. An important part of design ethics concerns the particular setup of such a participatory engagement, even though implicitly, participatory designers engage with ethical issues beyond such specific methods (Steen, 2011). Still, there have been criticisms of the ability of participatory design to achieve its ambitions. Mosleh and Larsen (2021) describe the limitations and complexity of participation and characterize how structural factors beyond specific tools or methods thoroughly shape participatory engagements. They describe how participation is fraught with power relations and dynamics, which are shaped by greater societal, political, and economic factors. Mosleh and Larsen (2021) argue that participation should be understood beyond particular forms of participatory engagements – such as workshops and co-creation sessions – rather, participation is integral to the entire design process with its daily conversations and informal interactions that amount to an unfolding network of relations, interactions, and meanings.

If understood in this way, design ethics concerns how designers or design researchers conduct themselves in relation to the continuous stream of social interactions and relations they are engaged in – especially concerning non-expert stakeholders. The lens of design anthropology can bring productive insights for understanding such social relations and interactions. Design anthropology acknowledges that different people will experience, perceive, and understand the design process differently according to their worldviews, values, goals and aspirations, sociocultural backgrounds, and socioeconomic statuses (Drazin, 2020). A designer-anthropologist aims to understand a range of factors that shape a design process and to foster a sense of empathy towards the human beings who are subject to them. Drazin (2020) argues that design usually comprises a ‘culture of care,’ and the design process comprises an ‘ethical field’

characterized by empathy and consideration of other peoples' needs, situations, and challenges. From his perspective, design is fundamentally an ethical activity as it aims to serve human needs, and it must be based on a practice of care insofar as designers must put themselves in other peoples' shoes. This design anthropology perspective aligns well with the call to understand design ethics as an 'invitation to care' (Ozkaramanli et al., 2022).

Design anthropology combines ethnography with design methods to understand the nuances of particular environments and their inhabitants. The broader sociocultural, economic, and political structures that shape design processes are understood by integrating ethnographic observations with anthropological theory. At the same time, design anthropology rejects the notion that researchers can be neutral, objective observers. Through mere ethnographic presence and deliberate design interventions, designer-anthropologists co-shape the field and take a reflexive stance regarding the consequences of such actions (Singh et al., 2021). Murphy (2016) describes that a crucial aspect is to consider the 'moral implications' of such interventions - i.e., to observe how interventions shape the moral judgments and perceptions of field participants. Overall, the design anthropological understanding of ethics developed here operates by observing how people, including designers, designer researchers, and other participants, enact ethics in a specific situation rather than how they think about ethics in terms of principles.

Another key aspect of ethics in design anthropology is its orientation toward uncertainty. In the field, there is an inherent tension between the future orientation of design and the anthropological interest in understanding the past and present (Kjaersgaard et al., 2016; Otto & Smith, 2013). Through the key concept of emergence, design anthropology studies how novel sociocultural phenomena emerge from ethnographic engagements or design interventions (Singh, 2019; Singh et al., 2021). Hence, the fundamental uncertainty accompanying the emergence - we cannot know with absolute certainty what will emerge - gives rise to particular ethical challenges (Akama et al., 2018). The emergent and evolving nature of the design process makes it challenging to predict how engagements will develop and how people will react to emergent phenomena; hence, it also makes the nature of ethical judgments dynamic, emergent, and evolving. Akama et al. (2018) also argue for taking a processual approach toward ethics, which brings attention to how ethics emerges in a particular future-oriented investigation. This is an essential aspect of the

approach developed in this paper: design ethics cannot be presupposed prior to an 'intervention' in the field.

An example of how the orientation toward potential futures gives rise to ethical questions is given by Arjun Appadurai, who distinguishes between “ethics of possibility” and “ethics of probability” (Appadurai, 2013). He characterizes “ethics of possibility” as connected to hope for a future that is different from the present, fueling the imagination and practices that aim towards more engaged forms of citizenship. In contrast, “ethics of probability” are associated with quantification, calculation, accounting, and technocratic forms of governance. We view the ethics of possibility to ‘open up’ a design process for alternative realities, while the ethics of probability to ‘close down’ a design process by controlling and ensuring that specifically defined outcomes are realized.

Designer-anthropologists use ethnographic observations and anthropological theory to study how each actor's worldviews and values shape the design process and how they are subject to greater societal forces and structures. One normative commitment is to foster a sense of empathy and practice of care towards collaborators and to enact design interventions with this in mind. Through such interventions, designer-anthropologists interpret what novel phenomena emerge, as well as associated ethical reasonings and judgments on behalf of collaborators. In this way, design anthropology becomes “a way of acting within complex, problematic issues” (Cross, 2023, p.8), with an orientation toward emergent futures.

In summary, design anthropology focuses on care, empathy, and understanding of the full range of human attitudes and experiences and holds that the ethics of a particular project emerge along the way—they cannot be determined a priori according to universal principles. Overall, we consider design ethics an integral part of a design process, as ethical judgments factor into the continuous, iterative making of decisions and managing social relations and collaborations between people. The design process consists of an unfolding and emergent field of various social interactions shaped by the personal and institutional needs, values, worldviews, challenges, and opportunities between actors involved in the process and potential ‘users’ of the design. Hence, our design anthropology approach understands design ethics in a relational and emergent manner by studying how the design process unfolds and how design ethics emerge in the continuous stream of social interactions, collaborations, and relations that accompany and constitute the process.

The rest of the paper reports on empirical research using the described approach. The findings show how designer-anthropologists must navigate these issues in a dialectical manner, maintaining a careful balance between different needs of the design process.

5.3 Empirical Research Context

The research is part of an ongoing interdisciplinary energy transition research project situated in Amsterdam Southeast, named the Local Inclusive Future Energy (LIFE) project. The project started in early 2021 and ends before the summer of 2025. In this project, a broad consortium aims to develop an innovative smart energy platform that addresses joint technical and social challenges. The technical dimension of the project concerns the congestion of the local electricity grid, which may be mitigated by incentivizing local stakeholders to participate in collective smart energy management. Using predictive modeling and an interface with external energy markets, stakeholders may reduce consumption at peak hours or use battery storage to provide flexibility to the grid. The social dimension of the project concerns the questions of how the system may address the needs, concerns, and values of a local underprivileged neighborhood, how residents may be included in the design process, and how the benefits of this platform may be fairly distributed. The consortium comprises various knowledge institutions with diverse disciplinary backgrounds, the municipality, the local grid operator, an organization representing the residents, industrial partners, and the local football stadium, whose 3MW battery serves as the primary energy asset for experimentation in this project.

As collaborators in this project, the authors are concerned with the issue of social inclusion, exploring how space can be created for underrepresented needs and voices, how a fair distribution of benefits of the platform can be structurally organized, and how a connection can be made between the social and technical disciplines. The main context is the local neighborhood of Venserpolder, an area with considerable ethnic and cultural diversity, with over 170 nationalities residing in the greater city district (Municipality of Amsterdam, 2021). At the same time, the area faces various interconnected socioeconomic challenges, including a lack of social cohesion and (energy) poverty (Municipality of Amsterdam, 2020).

Table 5.1: Selection of key research activities

Date	Activity
17-11-2021	Ethnographic field visit to Venserpolder
16-12-2021	Ethnographic field visit to Venserpolder
24-01-2022	Ethnographic field visit to Venserpolder
17-03-2022	Ethnographic field visit to Venserpolder
25-10-2022	Workshop with LIFE project consortium partners
28-03-2023	Workshop with LIFE project consortium partners
28-04-2023	Workshop with LIFE project consortium partners
16-05-2023	Workshop with representing consortium partners
03-07-2023	Co-creation session with residents in Venserpolder
25-09-2023	Co-creation session with residents in Venserpolder
13-11-2023	Co-creation session with residents in Venserpolder
22-01-2024	Co-creation session with residents in Venserpolder

This paper is based on data gathered over two years. Key field visits and workshops referred to are listed at a high level in Table 5.1. This table is not in any way exhaustive but is meant to indicate the general timeline and key activities conducted. Activities 5-8 are workshops with consortium partners held at one of the partnering institutions. These workshops typically featured 10-15 representatives of LIFE project consortium partners, with whom we collaborate regularly throughout this project. Activities 9-12 are co-creation sessions that were organized in a community center near Venserpolder. These sessions featured a varying composition of 5-10 participants, all residents in Venserpolder and many active in the local homeowners' associations.

5.4 Reflecting on the Emergence of Ethical Issues

This section reports on the ethical issues and reasonings that emerged during the research and how the authors navigated these issues in a dialectical manner. The findings are reported roughly chronologically, starting with the initial framings, aims, and project activities in section 3.2.4.1. Findings from the fieldwork challenged these initial understandings. Attempts were made to re-frame project activities mid-way through, as described in section 3.2.4.2. Finally, section 3.2.4.3. reports on the future outlook of the project and reflects on the inherent uncertainties about the potential for positive impact. The findings build on the conceptual understanding developed in the first half of the paper.

5.4.1 Initial project goals, activities, and defining user needs for the platform

The initial framing of a research or design problem, as well as the associated goals and activities, has implications for how the subsequent design process is organized and, therefore, for its design ethics (Prendeville et al., 2022). Initially, our project was framed primarily in terms of techno-economic product innovation, as the aim was to develop a smart energy platform, and our work was concerned with the understanding of ‘user needs’ for this platform. A tacit assumption was that enabling use and access for residents from the local neighborhood would give substance to the goal of social inclusion. As is common practice for multi-stakeholder research consortia, the work's deliverables, deadlines, and structure were largely pre-planned and pre-determined, and funding was distributed among project partners accordingly. There was a sharp division in project structure between the ‘social’ partners, i.e., those working towards social inclusion and stakeholder engagement, and the ‘technical’ partners, those working on modeling and software development. In the initial phases, there was an urgency for the social team to obtain data on user needs and provide timely insights to the engineers for technical development.

We undertook ethnographic field visits to the area (activities 1-4 in Table 5.1), particularly to several community centers, to get acquainted with local community leaders and connect to local informal networks. Ethnography is a careful process that requires a considerable time investment, but ethnographers often have to balance between speed and depth. The fieldwork was tedious: the topic of energy, or energy transition, did not resonate with the

people we spoke to, and especially the notion of a ‘smart energy platform’ was alienating and created distance (for more details on this ethnographic fieldwork and its challenges, see van Leeuwen & Singh, 2023). When attempting to avoid energy jargon and speak about other social issues, we still encountered resistance: people reported that the area frequently gets visited by researchers who often ask similar questions. People experienced this as intrusive and burdensome and felt there had been no significant improvements or changes in their environment due to these research activities. We found out that the Amsterdam municipality had marked the neighborhood as a ‘development neighborhood,’ prompting various activities from different institutions to investigate the area.

Another significant learning was that there were no households with solar panels in this area, nor any local energy initiatives, such as energy communities (van der Schoor & Scholtens, 2015). The framing of our project, where the smart energy platform would enable practices like Peer-to-Peer (P2P) energy trading, presupposed that people would have at least some surplus energy to exchange with others. There was a distinct disconnect with the local issue of energy poverty, which denotes a lack rather than a surplus of energy, and local community leaders reported that most people are too busy paying bills to be concerned about societal issues like the energy transition. Overall, people were not very interested in participating in research; some distrusted institutions, including universities, and did not wish to be the ‘user’ of the smart energy platform.

Reflecting on these findings, we realized that our presence was doing little to serve the interests of residents. Our aims to gather insight into user needs and values, and collect empirical data for academic research were motivated by the demands of our academic profession and the needs of our project. In our fieldwork, we found that many people felt that researchers kept coming in to collect data and leaving without a perceived relevance or reciprocity to the participants (for more details, see van Leeuwen & Singh, 2023). Was it ethical for us to do the same thing, knowing that people might not see the fruits of our research, or at least not for a long time? There is a risk here that well-intentioned research leads to data extractivism, an increasingly common concern in energy research (Devine-Wright & Ryder, 2024). Data is taken from people or communities to produce research outputs, yet little perceived value and benefits from it are provided back to the participants. At the same time, we felt

an accountability towards our consortium partners to deliver actionable 'user' insights in a relatively short term. The project meetings emphasized that the engineers building the platform could not afford to wait as the work was planned out, and there were deadlines to meet.

These findings provide several insights. Firstly, what was ethical in this design process depends on the perspective adopted and is thus a context-sensitive judgment. In our project, the right course of action depended on whether the needs of the residents were prioritized or the needs of our project partners. Secondly, the ethical reasoning around our research presence in this neighborhood only emerged after we had conducted our fieldwork. Thirdly, our project's initial framing and organization resisted an open engagement with uncertainty, as the project aims and organization were largely pre-structured.

5.4.2 Constraints and opportunities for mid-way project reframing

Reporting these experiences to the consortium sparked an ongoing conversation about the relevance of our project to these residents. Social inclusion was still one of the main goals, yet it became clear that delivering a product to excited customers was not the right framing. We organized several workshops to explore these issues more in-depth (activities 5-8 in Table 5.1).

Having been in direct conversation with residents, a genuine concern and interest in their needs and challenges required us to challenge dominant discourses within our consortium. Feeling that the dominant techno-economic discourse in the project was disconnected from the needs of residents, we felt it necessary to carefully navigate advocacy for the residents with the need to work in tandem with our partners. Hence, it was essential to adopt the viewpoints of our partners and meet them halfway to maintain productive collaborations within the consortium. For example, many project discussions were centered around the 'use cases' of the platform. Even though we believed that 'use cases' was not the right framing - at least for the residents we spoke to - most of our partners preferred this approach, and therefore, we worked along, bringing in nuances when possible.

It is relevant to consider to what extent these emergent ethical issues contributed to reframing the project's collective understandings, goals, and processes. Our findings show that this was possible only to a limited extent. Conceptually, our understanding of the platform evolved from a technological

product to a sociotechnical actor ecosystem with a variety of entangled relations, interactions, and exchanges (Björgvinsson et al., 2012), which our engagements with residents were a part of. The discussion shifted from a need to get user insights to a broader understanding of how we can structurally organize participatory engagements to be fairer and more reciprocal, where residents can participate while being able to benefit and fulfill their daily needs simultaneously. Besides pro-active participation as a normative good, we reflected that genuine care for the needs of our participants should work towards their unburdening. These findings show how new ethical reasonings emerged in the research process and how such understandings emerged during moments of reframing, recalibrating, and reconceptualizing the problem, which is inherent to design approaches (Dorst, 2019).

At the same time, while our design approach supported the reframing of collective understanding in the project, the practical consequences of this were constrained by bureaucratic structures and organization. As mentioned earlier, the projects' work packages, deliverables, deadlines, and overall goals were predetermined and fixed. Nor was it possible to reevaluate the deliverables based on the new learnings and reallocate hours and funding accordingly. In this sense, the space for maneuvering emergent ethical issues is limited if such moments of the re-evaluation are not built into the project structure from the beginning. Similarly, it was not possible to free up funding for residents to support their participation in the project on an equal basis and provide them the agency to co-shape the work according to their values. If we consider residents as local experts, as is common in participatory research and anthropology, they are not typically treated like 'professional' experts (Turnhout et al., 2020). Seen in this light, the construct of 'participation' might inhibit true shared decision-making, as participants are still external to the design process. Because participants are not present in the early stages of the work, when most negotiations about funding distribution and work structure take place, they are excluded from crucial phases of the process and from real decision-making power (Arnstein, 1969).

Our results show that genuine care for peoples' needs and a sensitivity to emergent ethical issues can provide rich insight into real problems, but also that there is a tension with practical organizational structures that tend to resist such a broadening of a project's scope. The risk is that design researchers remain within their own bureaucratically demarcated bubble, free to research

but often unable to intervene in the broader issues of ethical significance. As predefined goals and purposes are reinforced and reified, the dynamism is removed from the design process (Fry, 2019). The scope of ethical matters in design research should thus encompass formal project structure and resource distribution (Björgvinsson et al., 2010; Hillgren et al., 2011). Mechanisms should be built-in from the start that allow the 'opening up' of formal and bureaucratic procedures when the research reveals novel ethical concerns.

5.4.3 Uncertainty and the ethical ambiguity of future project outcomes

Finally, we reflect on the future outlook for our project and consider its potential to deliver ethical outcomes. With the goal of social inclusion of residents from the underprivileged neighborhood in innovative smart energy systems, the project has set high ambitions in what it aims to achieve. Recent and current project activities include co-creation sessions with residents (activities 9-12 in Table 5.1). However, there is a significant divide between these sessions and the rest of the project. Given the challenges described, it is highly uncertain whether residents' interests and the project's ambitions can converge in practice and whether this will contribute to ethical outcomes.

Several structural factors inhibit the transformative potential of our project, some of which specifically pertain to the energy sector. Designing in the energy sector means being subject to infrastructural constraints. The electrical grid and the organization around it are highly technical and technocratic and represent a black box for non-experts. This poses a challenge for designers and citizen participants, as user-facing energy applications are shaped by upstream infrastructural requirements that are usually beyond the scope of a designer's work. The energy sector is also highly institutionalized, subject to various laws, regulations, and policies that constrain the range of creative freedoms that designers might like to take and heavily limit the possibilities of design interventions they would like to make. For example, while the municipality is a key stakeholder in our project, the smart energy platform development became entangled with various other municipal programs, such as the renovation of homes and area development initiatives. To ensure structural impact, our design work would require intervention within this institutional environment - i.e., a form of infrastructuring or institutioning (Dantec & DiSalvo, 2013; Matthews et al., 2022). During the co-creation sessions with locals, a key recurring theme

concerned relations with the municipality and discussions of relevant regulatory frameworks. These findings show the relevance of broader structural and institutional factors to understand situated ethical issues, the lack of control designers might have over these factors, and the emerging uncertainties.

Another aspect concerns the use of smart technology and the tension between qualitative and quantitative framings of benefits. Research suggests smart solutions might become more prevalent for energy end-users (Geelen et al., 2013). It is unclear whether the use of smart technology is always desirable. During the co-creation sessions, many people stated their and other locals' struggles to keep up with online banking. The ethical impact of the 'smartification' of domestic energy control systems is ambiguous at best, even though the extensive use of ICT might be necessary to integrate renewable energy in the grid. Furthermore, while residents discussed and recognized aspects like social cohesion and collective values as potentially desirable outcomes, many discussions centered around the economic benefits and how they can maximize these. It created a dilemma for us: On the one hand, we want to explore and design with our participants an energy system that is more human-centered, social, and not limited to only financial and quantitative reasoning. On the other hand, our collaborators' wishes and needs are purely economic. We view this tension through Appadurai's (2013) conceptualization of the ethics of possibility and ethics of probability: the use of smart technology and the focus on financial outputs provide a sense of control and concreteness, while alternative social possibilities are often discounted as unrealistic and vague. We acknowledge that both are necessary. We consider that designer-anthropologists can dialectically navigate between these two ethical realms by supporting the emergence of alternative human-centered possibilities through a focus on care and empathy, yet acknowledging that quantification is an integral part of many transdisciplinary design and innovation work.

5.5 Conclusion

This paper has described a design anthropology perspective on design ethics that views design ethics as relational and emergent. Building on previous work in design ethics, we focus on the design process, as well as the collaborations and engagements with diverse actors, especially non-experts. The contribution of design anthropology to design ethics is twofold. Firstly, with an orientation

towards uncertainty and emergence, design anthropology identifies unexpected ethical issues and associated reasonings, interpreting how these emerge from social dynamics and arrangements. Secondly, design anthropology aims to foster a sense of empathy and practice of care towards collaborators by understanding the full range of human attitudes and experiences and interpreting how broader societal structures and forces shape these. We illustrated this conceptual framing with empirical findings from an energy transition project, highlighting the tension between the opportunity to act on emergent ethical issues and the constraints imposed by institutional and bureaucratic structures. For designer-anthropologists and others who face ethical issues in design, this paper recommends dialectically navigating such opposing needs and recognizing design ethics as dynamic, emergent, and evolving.

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PART III

Negotiating Futures and Fictions

This part contains two publications that engage in-depth with the dimension of temporality in particular, which came to the forefront in Chapter 5. These publications describe our efforts to make sense of how our agency, emerging relationships, and potential project outcomes can be understood along the time axis, so that a coherent course of future action could be envisioned for the project and the diverse actors involved.

CHAPTER 6

Chapter 6, named *Towards Design Fiction for Human-Centered Energy Transitions: Imagining Infrastructures and Worldbuilding* is a short paper that was published the *Pages for Art and Design* journal, as part of the special issue *Humanizing Energy: Design and Art for Energy Transition*. Because of word-count constraints, the paper does not contain any empirical descriptions. Instead, it proposes a way in which design fiction can be used to support human-centered energy transitions, and describes seven emerging energy worlds which can form the basis for design fiction. Whilst the framing of this paper can appear as somewhat disconnected from the rest of the dissertation, it can be understood as an attempt to grasp the nature of the diverse future visions that were circulating in the LIFE project – and hence, the role of such visions in co-shaping power dynamics.

Agency

Although this paper does not empirically describe ways in which we exercised agency in the LIFE project, it describes how design fiction can be a way of exercising agency. The diverse ‘emerging energy worlds’ that are described carry different values, and mobilizing such design fictions in social contexts can be a way of explicitly opening up such values to interpretation and contestation. This is due to the fact that there is a certain openness and ambiguity about design fictions: their focus on narrative can appeal to diverse human sensibilities, beyond local, quantitative or technical reasonings.

Relationality

Relationality is not a major factor in this paper, beyond the observations that the diverse energy worlds imply different types of social relations and reciprocities, and that design fictions should themselves be considered as relational entities by mobilizing them in social contexts.

Scale

The scale dimension may be recognized in the focus on energy infrastructures as an entry point for developing design fictions. Infrastructures extend across a large societal scale, yet severely enable and constrain the manner in which citizens and communities can engage with energy. By envisioning diverse infrastructural configurations for energy systems, the diverse energy worlds

describe different types of relationships between local, regional and national actors, and are intended to speak to actors at diverse levels of scale. Such relationships have an inherent political character, which is also reflected in the different energy worlds: the different infrastructural configurations imply different levels of agency for energy corporations, grid operators and energy communities. By envisioning such diverse sociopolitical fictions, the purpose is to enable and support present-day actors to engage with the sociopolitical dimensions of their own context and activities.

Temporality

The seven energy worlds that are described may be regarded as distant future possibilities, the seeds of which can already be recognized in the present. Still, unlike for example future scenarios, design fictions are positioned 'outside' of time - they are considered as ahistorical entities. This is because their main purpose is not to discuss real possibilities that lie ahead in linear time - rather, their main purpose is to support a process of deliberation, contestation, and emergence in the present. This is why the paper elaborates on the transformative purpose, and context of intervention, of these fictions. Importantly, these design fictions should not be regarded as ends in and of themselves: rather, they should be regarded as means towards transforming power relations and dynamics. In this way, this positioning of design fiction differs from e.g. critical and speculative design, where the context of the mobilization of the design is not emphasized to the same extent.

Abduction

The abduction dimension is most relevant in this paper, as design fictions are products of design abduction. The seven emerging energy worlds described represent the 'abstraction' part of this process, as they emphasize and extrapolate specific dynamics that are emerging in the present, whilst abstracting away everything else. In doing so, new interconnections and relations are envisioned, and new actor roles and identities are implied. These energy worlds are the product of our own agency and decision-making, which is explicated in this paper. The goal is explicitly to open up these envisioned roles and relations to contestation, by mobilizing design fictions with a particular transformative purpose. As mentioned in the paper, the seven emerging energy worlds are not complete design fictions, as the 'concretion' step is yet missing.

This step requires skilled designers to concretize these worlds in tangible artefacts.

CHAPTER 7

Chapter 7, named *Design Anthropology and Ontological Future Making: Transformative Action for the Emergence of Shared Futures* is a more extended paper that has been published in the journal *She Ji: The Journal of Design, Economics, and Innovation*, as part of a special issue on *Future Making*. This paper is heavy on both theory and empirical findings, and is situated on the intersection between temporality, agency, and relationality. In a nutshell, it explores how one can exercise agency to change – and make – the future, whilst being constrained by the temporal orientations of other actors and collaborators. Through a discussion of ontology, it describes how such agency entails a transformation of one’s own way of being, as well as that of the context of intervention. The paper also presents a 3-step approach named Ontological Future Making, which informs the answer to the second research question of this paper, which will be further presented in the concluding chapter of this dissertation.

At times, the framings mobilized in this paper – in particular the language around ontology – can appear unnecessary. I would like to explain here, why this framing was used. In particular, the notions of ‘ontology’ and ‘transformation’ are intended to characterize the felt experience of my exercise of agency. It was felt as a fundamental transformation of some of my own ways of seeing, being, and acting in the world. This paper, and its peculiar conceptual makeup, is an attempt to capture this transformation. It is only after this transformation that the topic of power could be more explicitly discussed in Chapters 3, 8 and 9.

Agency

Agency comes explicitly to the forefront of this paper through the term transformative action. The aim of transformative action, is to transform the ontological conditions – i.e., those aspects of our, or others’, particular way of being – that inhibit the possibility of making shared futures. The paper positions the act of reframing from ‘smart energy platform’ to ‘energy community’, which was also discussed in Chapter 5, as a form of transformative action, because it challenged several entrenched ways of acting and being of consortium actors,

whilst enabling the imagination of shared and integral energy futures for the project context. This paper also elaborates on the process of contestation which took place, by pointing towards the 'immediate tensions' which we encountered, and by describing how these were negotiated. In the co-creation process with the residents, the paper also describes how – in discussing their collective course of action – there was a need among residents to explicate both constraints and opportunities for action.

Relationality

This paper describes how the effort of building reciprocal relationships and collaborations is intertwined with issues of temporality. A precondition for multiple parties to determine a shared course of action, is not merely that interests are shared, but that the future evolution of different – not necessarily shared – interests is aligned. Since actors' mode of acting and planning towards future interests is bound up with their way of being in the world, the building of relationships entails a transformation of their ontologies. In this paper, we characterize this ontological transformation, insofar it opens up shared futures, as future making. In this way, design-as-relation-building can be seen as equivalent to future-making.

Scale

The scale dimension is not particularly important in this paper beyond what was discussed in earlier sections. One notable aspect, is that the establishment of an energy future is not only positioned as a desirable outcome, but as a necessary precondition for discussing the energy futures of the neighborhood, as well as futures that are shared with actors beyond the neighbourhood. Because energy communities are entities which are recognized by the dominant energy regime, its establishment gives the neighborhood a particular kind of legitimacy and status – or, dispositional power – which it did not have before, and which enables new relations with regime entities.

Temporality

As mentioned, temporality is a central theme in this paper. Over the course of the fieldwork, it became clear that many different future goals, interests and visions were circulating and entangled within the project, which created significant confusion and ambiguity. This paper describes the process of

untangling these diverse futures, explicating the different timelines involved, and mobilizing the diverse futures in a present context of emergence and contestation. In this way, our course of agency redirected the focus from the future to the present, which made action and 'future making' possible. This further highlights the need for an evolutionary approach: whilst long-term futures may be envisioned, short-term agency must always aim at immediate and narrow goals, and hence take place in many small steps. Hence, the empirical findings of this paper are intended to provide a roughly chronological overview of these many small steps, which are broken down in three greater phases.

Abduction

Notably, this paper describes how we mobilized the concept of 'local energy institution' within the project consortium to facilitate the negotiation of futures. Opposed to the 'smart energy platform', which is an apolitical entity coded with technological and economical meanings, a 'local energy institution' is explicitly a political entity, coded with social meanings. Hence, this intervention represents the use of design abduction to politicize a process which was hitherto not political. Another aspect in this dimension is that the entanglement of knowledge and action comes to the forefront in this paper: the expression of knowledge is akin to the exercise of agency.



6

TOWARDS DESIGN FICTION FOR HUMAN-CENTRED ENERGY TRANSITIONS

Imagining Infrastructures and Worldbuilding

This article⁴ proposes to support human-centered energy transitions through design fiction. Design fiction is conceptualized as a form of worldbuilding in the sense that design fiction not only represents alternative realities but also intervenes in the processes of their emergence. For the context of energy transitions, this article proposes to approach worldbuilding through an understanding of and engagement with energy infrastructures. The distributed agencies and lengthy time horizons that characterize infrastructural development pose interesting challenges for designers and can be subverted by leveraging the poetic and aesthetic qualities of infrastructure through design fiction. The approach is illustrated using seven emerging energy worlds, and future steps are identified to develop these into proper design fiction further. Overall, our approach draws together technological, political, and economic trends in the energy sector and provides pointers for designers and artists to intervene and co-shape energy transitions.

⁴ This chapter was published in *Pages on Arts & Design*, as (Van Leeuwen & Singh, 2024)

6.1 Introduction

Energy transitions are multidimensional and distributed processes that unfold over multiple decades. This creates challenges for designers who intend to intervene, as a local, human-centered focus is quickly overshadowed by systemic and infrastructural issues (Van Leeuwen & Singh, 2023). Furthermore, energy systems and infrastructures emerge through the distributed agency of many actors, including engineers, policymakers, and administrators, which raises questions about the impact a single designer can make. To address these challenges, this article proposes using *design fiction* to support shifts in values, mindsets, and practices across the distributed networks that shape energy transitions. Through this use of design fiction, the agency and autonomy of all who co-shape energy transitions are acknowledged and respected, as opposed to intervention through political or technological means.

The approach is fleshed out using the concept of *worldbuilding*, which we interpret in two different senses. First, worldbuilding serves to construct representations of alternative and emerging realities. Through worldbuilding, designers and artists can draw the interrelations between emerging technologies, political-economic structures, sociocultural values, and novel forms of community organization, all of which are important aspects of the transition from fossil to renewable energy. Second, by invoking worldbuilding, we recognize and utilize the performativity of design fiction, as it has the capacity to *intervene* in emerging energy transitions. By stimulating the imagination and critical reflection, design fiction can shape sociocultural values and meanings of energy transitions, thereby intervening in the coming about of alternative realities and emerging worlds.

This article proposes to take energy infrastructures as an entry point to characterize how such worldbuilding might occur in the context of energy transitions. Infrastructures draw together technological innovations, political regimes, economic paradigms, and cultural meanings, thus providing a natural underpinning for building an integral vision of alternative futures. Furthermore, infrastructural developments are at the core of the transition to renewable energy. This paper draws from various scholarly perspectives on energy infrastructures, which serves to understand how design fiction can represent various energy transition realities and intervene in emerging infrastructural developments.

Finally, we illustrate our approach by sketching seven *emerging energy worlds* and identifying future steps to turn these into complete design fictions. Overall, this approach to design fiction serves to shift mindsets and value judgements among the distributed actors that co-shape energy transitions.

6.2 Design Fiction as a Form of Worldbuilding

An early, important work on design fiction is the 2009 essay *Design Fiction* by Julian Bleeker. In his account, design fiction inhabits a middle ground between science fiction and science fact, combining creative speculation with a grounded understanding of real possibilities. He further characterizes this using the term *diegetic prototypes*, which denotes how speculative technologies, products, or services are experienced by subjects in their idiosyncratic manner. Since then, design fiction has been adopted by the design research community and explored from various perspectives, including user personas and scenarios, narratology and literary theory, and speculative and critical design (Baumer et al., 2020).

This article proposes to understand design fiction through the concept of worldbuilding. We draw from the work of Coulton et al. (2017), who argue that design fiction is a form of worldbuilding rather than a form of storytelling or narrative. They retain the diegetic perspective - i.e., a first-person, subjective view 'from within.' However, instead of focusing on characters and plotlines, Coulton et al. (2017) emphasize how design fiction can reveal the elements of an imaginary world, as well as the meanings and interrelations of such diverse aspects. This way, design fiction imagines how technoscientific prototypes interact with individual human understandings, situated cultural meanings, and greater societal structures and systems. Design fiction can represent alternative worlds and realities by understanding worldbuilding in this manner.

There is an important second sense in which worldbuilding can be understood, as design fiction can also enact and perform worldbuilding in the social context where it is deployed. This perspective builds on authors like Markussen et al. (2020), who propose that design fiction should be understood through its potential to create social transformation rather than its ontological foundations. Another proponent of this approach is Zaidi (2019), who suggests that designers can support the transformation of cultural meanings and societal structures through worldbuilding practices. Various applications of design

fiction show how such transformations can concretely manifest. For example, Wu et al. (2019) use design fiction to stimulate ethical awareness and reflection among professionals, and Blythe et al. (2016) show how design fiction subverts solutionist thinking. Furthermore, the field of design anthropology may provide useful pointers, as it combines an understanding of emergent, alternative worlds with interventionist and performative action (Smith & Otto, 2016; Halse & Boffi, 2016; Singh, 2019). Building on such perspectives, this article proposes to use design fiction to support co-shapers of energy transitions in their judgments, reflections, practices, and actions. It does so by pointing toward alternative realities and possibilities, illustrating the diverse ways sociocultural meanings and values can manifest.

6.3 Energy Infrastructures as a Starting Point for Worldbuilding

This section argues that infrastructures form an interesting point of departure for worldbuilding due to their interconnective, heterogeneous, and pervasive nature. By discussing various important dimensions of energy infrastructures, including their political, economic, and aesthetic dimensions, a conceptual toolbox is constructed to conduct worldbuilding in the context of energy transitions.

First, we argue that an understanding of infrastructures creates an integral picture of a world that ties together technology, societal structures, cultural values and meanings, and individual, subjective perspectives. Infrastructures can be considered the backbone of modern civilization, as they create the interconnective tissue for the flow of people, materials, and ideas (Larkin, 2013). More than a material network of interconnected technological components, infrastructural ecosystems consist of entangled technologies, administrating organizations, financial techniques, and regulatory structures (Hughes, 1983). As such, infrastructures create the enabling background conditions for society to function.

In particular, energy infrastructures are closely tied to political and economic systems. In his 2011 work, *Carbon Democracy: Political Power in the Age of Oil*, Timothy Mitchell analyzed how the materiality of coal- and oil-based infrastructures co-shaped with the political paradigms of their time. While labor-intensive coal logistics enabled worker strikes and hence socialist politics,

oil pipelines and extraction wells centralized control with Western governments and corporations. Dominic Boyer (2019) provided a more present-day perspective, who coined the term *energopower* to show how wind energy development in Mexico co-developed with diverse political and institutional processes, including the interests of local indigenous groups.

Whilst this is only a brief indication of the significance of these works, they show the necessity for worldbuilding practices in the energy context to take matters of power and politics seriously and how infrastructural properties shape these. In the second, interventionist sense of worldbuilding, infrastructures pose interesting challenges for designers. Thomas Hughes' 1983 book *Networks of Power* shows these in two important ways. Firstly, the electrical grid is shown as a fundamentally distributed system where no single actor controls its development. While individual entrepreneurs like Edison played an important role, competing systems and models emerged in diverse regulatory regimes and geographical contexts, stabilizing beyond the control of any individual actor. Designery intervention in infrastructural development must somehow account for this distributed agency. Furthermore, Hughes described how various phases of infrastructural development unfolded over decades. The long development time of infrastructures means there is a fundamental uncertainty about how early interventions will develop over time.

To deal with these challenges, we propose that designers can participate in infrastructural change by supporting informed reflection, decision-making, and judgement for people who are a part of infrastructural ecosystems. Design fiction can support this by leveraging the *aesthetic* dimension of energy infrastructures. This aspect is identified by Brian Larkin (2013), who argues how the materiality of infrastructure - e.g., the concrete of a road or the iron of industrial machinery - produces a certain aesthetic sensibility in the beholder, which shapes the subjective meanings associated with the infrastructure. He also argues that infrastructures have a *poetic* quality, as they are often associated with promises and visions of societal progress. Since infrastructures are so extensive and heterogeneous, Larkin argues that the definition of an infrastructure is a political act. This would make exploring energy infrastructures through design fiction a political project in its own right, as would how designers give shape and form to the aesthetics of infrastructures. This article holds that leveraging the aesthetic and poetic qualities of infrastructures within design fiction is a promising avenue for designers to pursue and co-shape

infrastructural developments. This is opposed to traditional forms of product design, which occupy a limited space downstream of an infrastructural ecosystem and are subject to dominant economic and political paradigms.

6.4 Infrastructural Innovation in the Transition to Renewable Energy

Having established the relevant aspects of energy infrastructures for worldbuilding, this section discusses the infrastructural overhaul required for the renewable energy transition, touching on technological, political, and social dimensions. The current electrical grid is organized in a hierarchical, centralized manner, as it transports electricity from a few centralized power plants to many end-consumers. Renewable energy requires a fundamentally different, more decentralized architecture. Solar and wind energy are geographically dispersed, and new sources of flexibility are required to compensate for the uncontrollability of the weather. Under the smart grid paradigm, digital technologies are expected to play a larger role in data collection, predicting future energy flows, and controlling the grid (Skjølsvold et al., 2015). Furthermore, new end-user-facing technologies are also emerging, such as electric vehicles, smart home energy systems (Geelen et al., 2013), and digital energy platforms (Boekelo & Kloppenburg, 2023).

Existing research provides several pointers for understanding these developments' political, economic, and aesthetic qualities. A common expectation is that bottom-up actors like prosumers and energy communities gain power by practicing *energy citizenship* and *energy democracy* (Wahlund & Palm, 2022). Households and communities can become more autonomous by utilizing locally sourced renewables and energy storage, such as batteries. Hence, the renewable energy transition may not only lead to a more distributed infrastructural architecture but also a more decentralized political system (Funcke & Bauknecht, 2016). At the same time, the increasing reliance on smart technology may centralize control in the hands of a select few actors, as has been the case in other sectors. Since smart technology is associated with technocratic and solutionist forms of governance, its use in energy systems may have a depoliticizing or even *antipolitical* effect (Sadowski & Levenda, 2020). An example of this could be *demand response* practices, which are techniques for

grid operators to steer behavior using price signals to secure the grid's stability (Calver & Simcock, 2021).

Similar arguments can be made about novel modes of energy exchange. A common expectation is that households will evolve from consumers of energy to *prosumers* of energy who engage in peer-to-peer (P2P) energy trading on local energy markets. While this is often hailed as a positive and empowering development, it is not difficult to recognize the framing of the homo economicus in these perspectives, where end-users of energy are seen as rational individuals who are optimizing for self-interests (Singh, 2019; Singh et al., 2017). This approach may be distinguished from perspectives on energy communities, where access to energy resources is shared collectively (Bauwens et al., 2022), the energy justice framework which prioritizes a just distribution of costs and benefits (Hanke et al., 2021), and alternative forms of energy exchange which prioritize social relations (Singh et al., 2018). While these discussions briefly show what contested aspects of renewable energy infrastructures are emerging, they indicate potential directions designers and artists may explore in their worldbuilding efforts.

6.5 Seven Emerging Energy Worlds

The above sections discuss what could be the conceptual building blocks for designers and artists to explore the significance of energy transitions through worldbuilding. This section presents early versions of what we take to be *emerging energy worlds*. These worlds are constructed using concepts discussed above and from empirical research conducted in a local energy transition project in Amsterdam Southeast. Through ethnographic fieldwork and cocreation sessions, the authors explored tensions between diverse stakeholders, the potential for community involvement, and the design of infrastructural innovations. This research is not further elaborated within this paper, but for more details, readers can refer to Van Leeuwen & Singh (2023) and Van Leeuwen & Singh (2024).

The worlds described here are not exhaustive of all possibilities but indicative of directions that might be pursued in future work. For the present article, these worlds are described at a high level – they are not complete design fiction but provide directions for further development. If sections provide the grounding realities of ‘science fact,’ the section proposes avenues for creative

speculation. Several steps should be taken to further develop these directions into concrete design fiction. For each emerging energy world, suggestions are made about what these steps could look like.

The first step is to consider the *transformative purpose* of the design fiction, i.e., the shifts in mindsets, values, or practices this design fiction should support. The second step is determining the *social context* in which it will be deployed, regarded, and explored. Design fiction may be strategically mobilized within projects, networks, or organizations that make up the process of infrastructural development. The third step is to define the *aesthetic form* the design fiction will take, including the subjective perspective from which the energy world is perceived. This is crucial for creating immersion and imagination beyond present-day constraints and realities.

A Crumbling Grid

What would the world look like if the electrical grid failed to provide a stable electricity supply and the power went out for days or weeks? Supply chains, digital communications, digital payments, and other systems we have taken for granted could fail and become inaccessible. As a result, authorities might implement emergency measures to reduce and control energy consumption to safeguard the grid's stability.

- *Transformative purpose*: to make people aware of the crucial reliance of our society on the electrical grid and how it enables our daily practices.
- *Social context of intervention*: with end-users of energy, i.e., citizens who are not particularly aware or conscious of how the grid is functioning.
- *Aesthetic form*: a day-in-the-life of end-users of energy to explore how daily life is impacted by a lack of stable electricity supply

Techno-Capitalist Monopoly

What if large technology corporations assume complete control over the energy system and own the energy supply and grid infrastructure? Such actors could use advanced technologies like artificial intelligence to predict and control energy flows in the grid, which would be completely invisible to outsiders. Volatility in energy markets could increase corporate profits at the expense of household energy expenditures.

- *Transformative purpose:* to make people aware of the consequences of excessive use and reliance on smart technology and free market mechanisms.
- *Social context of intervention:* with technologists, innovators, and economists in the energy sector, to explore the consequences if a technology-centric, market-based approach is taken too far.
- *Aesthetic form:* a speculative smart energy product-service system or a 'job-of-the-future' description for a smart energy technologist working at a large technology corporation.

Autonomous Energy Community

What if local communities isolated themselves from the rest of the system, aiming to become as independent as possible? Such tight-knit communities might jointly share access to energy resources without a notion of individual ownership. Technical skills in infrastructural maintenance would be highly valued, and social relations could be characterized by in-kind exchanges.

- *Transformative purpose:* to support reflection on an approach to energy systems that prioritizes social relations and values rather than technology and efficiency.
- *Social context of intervention:* with citizens looking to start an energy community, as well as professionals who develop tools, products, and services for energy communities, or who work with energy communities.
- *Aesthetic form:* a day-in-the-life of members of the autonomous energy community, using visuals that represent local community life.

Smart Energy Household

What if households embraced smart technology, combining household solar energy, batteries, and algorithms to optimize their own consumption? Automated systems could trade this energy on local energy markets to maximize profit and minimize costs. Through apps and other product-service systems, households are engaged through gamification and energy competitions to change their behavior.

- *Transformative purpose:* to explore peoples' preparedness to adopt new home energy systems and services and to support a more user-centric design of such products.

- *Social context of intervention*: in design and innovation processes where professionals are working on new smart energy systems and services, as well as with potential future adopters of these technologies.
- *Aesthetic form*: a day-in-the-life, or other representation, of how end-users of these speculative technologies adapt their daily routines to a home smart energy system.

National Energy Commons

What if national governments assumed top-down, technocratic control over the energy supply? Expert knowledge and scientific instruments could be mobilized to meet national goals for reducing the energy system's CO2 emissions. Energy budgets could be imposed on end-users, and national campaigns could be organized to educate people about energy use and recruit people for energy-related jobs.

- *Transformative purpose*: to stimulate reflection on the controversial decisions that might emerge around energy governance and the degree to which political control should be centralized.
- *Social context of intervention*: with policymakers, energy policy researchers, and anyone else interested in energy system governance.
- *Aesthetic form*: explore decision-maker's perspective in energy governance and the tensions and dilemmas they encounter.

Smart Energy Hub

What if businesses and commercial actors worked together to better maintain the stability of the local electricity grid? Businesses could strike special contracts with the grid operator to share access to the grid and use smart technology to jointly optimize the use of solar energy, battery and heat storage, and flexible consumption.

- *Transformative purpose*: to support businesses and other commercial actors in collaborating and exploring joint energy transition solutions.
- *Social context of intervention*: with business representatives who are open to exploring collective energy solutions.

- *Aesthetic form*: a speculative contract or interface that represents how energy resources among different actors are interconnected and interoperate, which shows the social agreements that are in place for local energy governance.

Local Energy Institution

What if the energy system were governed democratically, with local institutions for political decision-making? Such institutions could govern a particular grid section and impose their own form of energy taxes and regulations. They would make political decisions about how scarce energy resources are distributed, exchanged, and organized.

- *Transformative purpose*: to explore what kind of political decisions and reasonings factor into local energy system governance and what a democratic institution in this regard could look like.
- *Social context of intervention*: with policymakers, citizens, researchers, or other professionals interested in exploring alternative forms of local energy system governance.
- *Aesthetic form*: represents the perspective of local leaders or politicians who are tasked with making decisions about local energy system governance.

6.6 Towards Design Fiction for Human-Centered Energy Transitions

Transitions and infrastructural developments unfold over decades, and, likely, many future developments in technology, governance, and economy cannot be foreseen. Furthermore, the extensive scale and distribution of agency in systemic transitions is such that local, human-centered interventions are limited in scope. This article provides pointers for how design fiction can serve to intervene at a local level while not losing sight of greater systemic trends.

While this article aims to make steps toward developing design fiction that supports the emergence of human-centered energy transitions, these efforts are far from complete. From the descriptions provided in Section 5, several important steps still need to be taken to develop design fiction, as we have defined in this article. Design fiction should go beyond textual descriptions and consist of visual and material prototypes. Such prototypes should illustrate

diverse aspects, including the social, political, and technological, at various scales, including local, national, and global, and through diverse perspectives, including end-users, professionals, or decision-makers. While we intend to explore these in future work, we encourage other designers, artists, and researchers to do the same.

Design fiction can support nuanced perceptions, reflections, and actions among energy transition actors by sensitizing people to these diverse realities and possibilities.

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7

DESIGN ANTHROPOLOGY AND ONTOLOGICAL FUTURE MAKING

Transformative Action for the Emergence of Shared
Futures

This paper⁵ presents a novel approach of Ontological Future Making which prioritizes transformative action. Rather than considering the distant possibilities and consequences of futures, this approach engages with the negotiation of futures in the present. It is based on a review of existing work from the field of design anthropology. The paper describes three steps of Ontological Future Making: to understand the future orientations of actors involved, engage with the immediate tensions that arise from their negotiation, and transform the ontological conditions that constrain future possibilities. We illustrate the approach with empirical data from a local energy transition project in Amsterdam Southeast. In this empirical account, we describe the future orientations of project partners and local residents and identify tensions related to extractive research and disciplinary differences. We describe the actions taken to address these tensions, and describe our collaboration with residents to establish a local energy community. We

⁵ This chapter was published in *SheJi: The Journal of Design, Economics, and Innovation*, as (Van Leeuwen et al., 2025)

characterize this initiative as transformative action as it served to enable shared futures for the project. We discuss the implications of these findings, arguing that future making should be more direct, political and relational.

7.1 Introduction

This paper develops an approach of Ontological Future Making which is transformative and action-oriented. The purpose of *transformative action* is defined as the transformation of the ontological conditions that constrain the possibility of making shared futures. With this approach, we respond to calls from various disciplines that engage with futures. In design studies, we contribute to the need to move beyond design as a neutral problem-solving practice, and harness its capacity for political agency in bringing about futures (Yelavich & Adams, 2014). In anthropology, we contribute to the need for anthropologists to become active participants in practices of worldmaking, and focus on emergent futures rather than the past and present (Salazar et al., 2017). In organization and management studies, we respond to authors who describe the need to move beyond foresight, speculation, and strategization (Comi & Whyte, 2018; Pettit et al., 2023; Whyte et al., 2022), who foreground practice-based approaches (Thompson & Byrne, 2022; Wenzel et al., 2025), and who consider how future making is situated in modes of collective inquiry and deliberation (Comi et al., 2025). We aim to retain the iterative, constructive, and creative process that design approaches bring to innovation (Brenner & Uebornickel, 2016) whilst prioritizing plural, shared, and collective societal interests (Ehn et al., 2014). The contribution of our approach lies in undertaking local and pragmatic action while aiming to address long-term societal challenges (Fry, 2003, 2009).

Our Ontological Future Making approach is informed by existing works in design anthropology. Design anthropology is an academic field that has been characterized as a 'style of knowing' (Otto & Smith, 2013) and that combines aspects of design and anthropology - design being the practice of giving form to new ideas, and anthropology being a mode of inquiry into situated sociocultural life of people and communities. Design anthropology combines the two fields in various configurations: as the anthropological study of design practices, as the use of anthropological knowledge for design purposes, or the generation of

anthropological knowledge through the use of a design intervention (Murphy, 2016; Singh et al., 2021).

Design anthropology considers future making to be implicit in informal, daily modes of acting and planning, making it well-positioned to empirically understand how futures are created in day-to-day practices (Wenzel, 2022). We further argue that the emphasis on the plurality and present emergence of futures, as well as relationality, are essential insights to take from design anthropology. Still, we recognize a gap in design anthropology: how can it be mobilized to address societal challenges? Our contribution to design anthropology consists in the element of transformative action, which is aimed at transforming the fundamental conditions that shape future possibilities. Since these conditions are entangled with ways of interacting with – and being in – the world, we make use of the lens of ontological design. We synthesize these diverse insights in our Ontological Future Making approach, which we delineate in several steps. The first step is to develop an understanding of the *future orientations* of diverse actors involved in a project, as well as the conditions that constrain and define these future orientations. The second step is to identify how differences in future orientation between actors give rise to *immediate tensions* in the present. The third step is to *transform ontological conditions* so shared future orientations can emerge, thereby enabling shared future making. We illustrate our approach with an empirical study, where we mobilize our approach in a longitudinal energy transition project in Amsterdam Southeast.

The paper is structured as follows. In Section 7.2, we conduct a conceptual review, examining literature from various fields, most notably design anthropology. Section 7.3 delineates our approach of Ontological Future Making in three steps and describes how it addresses the issues raised in Section 7.2. Section 7.4 then outlines the methodology used for the empirical study, the results of which are reported in Section 7.5. In Section 7.6, we provide a broader discussion of the implications of our approach for future making, focusing on how future making can be more direct, political, and relational. We conclude the paper in Section 7.7.

7.2 Making Futures in Design Anthropology

Our conceptual review is guided by several key questions, which are discussed in the following order: How and where is the future, or are futures, encountered? Who can participate in the making of futures, and how is this participation organized? What should the role of researchers, designers, and other practitioners be who aim to support such processes? We focus on how design anthropology addresses these questions and distinguish it from other fields.

As a starting point for the first question, design anthropology considers futures to be multiple rather than singular. It regards futures as the “multiplicity of ideas, critiques and potentialities that are embedded in the narratives, objects and practices of our daily lives” (Kjaersgaard et al., 2016, p. 1). This plural understanding of futures opens up a diversity of pathways and possibilities, as compared to the idea that the future is a single, remote location ahead in linear time, which can be colonized through the mobilization of power (Adam, 2008). The perspective of the future as singular can be recognized in corporate practices of for-profit innovation (Dunne & Raby, 2013) and other forms of future planning that aim to reduce uncertainty (Abram, 2017). These practices can be understood as ‘defuturing’, as they constrain the range of possible futures (Fry, 2020). Taken to their extreme, the singular understanding of the future can result in hegemonic, monolithic, or colonial practices. Whilst some design practices, focused on narrow problem-solution framing and linear strategization, have also contributed to this issue (Mazé & Wangel, 2016), design anthropology takes the opposite approach.

Furthermore, rather than seeing futures as distant locations, design anthropology considers them to be enacted in the present, in mundane everyday practices (Gatt & Ingold, 2013; Kjaersgaard et al., 2016). From this perspective, future making is not a practice of strategization towards a distant goal, but consists in how people engage in everyday planning and speculating. In this way, design anthropology embraces the improvisatory and messy dynamic of the everyday and acknowledges that, ultimately, futures cannot be controlled. Design anthropology recognizes a fundamental uncertainty about futures, and draws attention to their emergence in the present, rather than the implications of future outcomes (Otto & Smith, 2013; Singh, 2019). In this way, it is well-positioned to draw attention to the present tensions, conflicts, and controversies surrounding emergent futures, and how these are co-shaped by various factors from the past and the present (Smith & Otto, 2020). With uncertainty and emergence as key principles, design anthropology considers

how emergent futures are contested and political (Pink et al., 2018; Salazar et al., 2017).

With the politicization of futures at stake, the next key question concerns who gets to participate, and how this participation is organized. We argue that design anthropology has something to offer in this regard by distinguishing it from speculative design. Speculative design has been a popular approach in engagements with the future, and it shares many commonalities with design anthropology: it also embraces uncertainty, acknowledges the plurality of futures, and prioritizes critical reflection and contestation (Dunne & Raby, 2013). However, speculative design tends to be situated in museum exhibitions or other controlled and curated environments – a practice for which it has been criticized (Gerber, 2018). In such curated environments, design artefacts are removed from the context where change is taking place, and hence also removed from the stakeholders involved in the process of emergence. This creates space for critical and speculative reflection (Abram, 2017), but also a risk that aestheticization of futures takes precedence over politicization (Gerber, 2018; Light, 2021). The focus on curated environments may exclude laypeople who would not naturally visit such environments, whilst there is much to gain from including them in speculative engagements (Farias et al., 2022).

Because design anthropology engages with futures in everyday settings, we argue that it is better equipped to engage with the micropolitics from which futures emerge. Embracing everyday contexts comes with a certain messiness and ambiguity. This has further implications, which we highlight by distinguishing design anthropology from participatory design. Participatory design utilizes specific methods and techniques to mediate the encounters between experts and laypeople (Björgvinsson et al., 2010; Dantec & DiSalvo, 2013), thereby prioritizing the voices of underrepresented groups and making design processes more relational and democratic (Ehn et al., 2014). Hence, participatory approaches provide a promising avenue for more inclusive future engagements, as also demonstrated by the participatory turn in speculative design (Barendregt et al., 2024). Still, participatory engagements are typically curated, structured, and orchestrated through the specific techniques employed by the participatory design experts, which come with specific challenges (Mosleh & Larsen, 2021). There is a risk that participants' influence remains at the level of output rather than process (Arnstein, 1969). If the participatory techniques used provide too little flexibility to participants, the participatory designer may obtain

undue political power. Furthermore, the process is unavoidably shaped by socio-economic, cultural, and political factors that are beyond the control and influence of a participatory session (Mosleh & Larsen, 2021). Finally, the very idea of participation can reify and reproduce the distinction between experts and participants, thereby perpetuating the power asymmetry between them (Turnhout et al., 2020).

These and other considerations have led to a call to better embed participatory engagements in contexts of everyday living (Luck, 2018). Design anthropology is well-positioned for this purpose, as participatory engagements are situated in ethnographic encounters in everyday settings. Whilst ethnographic interventions are also characterized by some degree of prefiguration, they are less staged than participatory workshops, which mobilize specific tools, procedures, and methods (Light, 2015). Instead of considering structural factors as external barriers for participation, they are engaged in their messy everyday enactment and considered part of the process of future making. Design anthropology aims to engage with and restructure social relations in their natural environment, and is thereby equipped to directly address the politics of participation as they emerge (Light & Akama, 2014). In this endeavor, the future orientations of diverse actors – including people, artefacts, and institutions – become layered and entangled (Bryant & Knight, 2019), and it is as such that design anthropology engages with futures.

One key question that remains is how designers, researchers, or practitioners should play an active role in collaborative practices of future making. In design anthropology, scholars have explicated this role through the concept of intervention (Murphy, 2016), which can be understood in various ways. First of all, when designer-anthropologists (Singh et al., 2021) conduct ethnography, the field site is considered to be constructed in practice rather than ‘found’ in an objective sense (Otto & Smith, 2013). By entering into mutual relationships with collaborators, the context is actively and reflexively co-shaped, including the futures that are emerging within it. In this way, the distinction between the designer-anthropologist and participants is challenged, as both are equal co-creators of a shared reality (Gatt & Ingold, 2013; Halse & Clark, 2008). Participation is enacted in the ethnographic encounter, which is of an improvisatory nature, characterized by its mundaneness, and situated in contexts of everyday living and working. In this way, participation is understood differently than in orchestrated participatory workshops. The participatory

ethnographic encounter is also political insofar as it disrupts existing relations within the context, thereby intervening in the emergence of futures. Besides ethnography, designer-anthropologists also intervene in other ways, as they employ diverse tools, techniques, artefacts, and visual media to mediate participatory engagements (Pink et al., 2017). Still, these other modalities of participation should be understood in the same way: as improvisatory, co-creative, and everyday. To refer to this design anthropological modality of ‘participation’, we use the concept of *relationality* in Ontological Future Making, which will be elaborated upon in Section 7.3.

Still, we argue that there is an underexplored potential for design anthropology to be more transformative and action-oriented in its approach. Many design anthropological interventions still take place in curated environments. For instance, Otto & Smith engage teenagers in a museum exhibit on digital culture (Otto & Smith, 2013), and Mazé stages an exhibition to explore energy futures (Mazé, 2016). Whilst the curation of such interventions cannot be entirely avoided, it would be interesting to situate them in contexts of social and technological change, innovation, and transformation. Furthermore, the intervention of design anthropology is often situated at the conceptual level, aiming at changing perceptions, knowledge, and concepts. For example, while Pink et al. work in an interdisciplinary setting on the design of autonomous vehicles, their focus is on generating conceptual insights rather than achieving subsequent transformative outcomes (Pink et al., 2020). Furthermore, while Kaviani et al. explore mundane practices of energy use in a novel manner, the transformative impact does not go beyond challenging common assumptions and perceptions (Kaviani et al., 2023). Singh et al. focus on conceptualizing energy exchanges in rural India as a key outcome (Singh, 2019), and various authors characterize design anthropology as a “style of knowing” (Kilbourn, 2013; Otto & Smith, 2013), thereby underscoring its conceptual focus.

We argue that a focus on conceptual innovation does not harness the full potential of design anthropology to contribute to societal transformations and the emergence of shared futures. We argue that designer-anthropologists should engage in transformative action and intervene in the emergence of futures. In the next section, we will outline our approach, named ‘Ontological Future Making’, which aims to provide this.

7.3 Ontological Future Making and Transformative Action

This section describes our proposed approach, *Ontological Future Making*, which embraces the strengths of design anthropology while incorporating a crucial element of transformative action. Whilst this approach is currently discussed in theoretical and abstract terms, it is made concrete and illustrated in Section 7.5 using empirical findings.

The starting point for the approach is the following situation. Diverse actors are engaged in a collaborative process of fostering social and technological change, where diverse futures become entangled in their messy everydayness. Such multi-actor collaborative settings are often characterized by challenges, misunderstandings, and disciplinary differences. Ontological Future Making assumes the situated perspective of the designer-anthropologist, who aims to contribute constructively by supporting the emergence of shared futures between all actors. In doing so, the designer-anthropologist prioritizes societal needs and the voices of underrepresented stakeholders.

To engage in the making of shared futures, the designer-anthropologist must first understand the *future orientations* of the diverse actors involved. The future orientation of an actor is defined as their time horizon for planning and acting (Bryant & Knight, 2019). This future orientation is thoroughly constrained by an actors' mode of being in, and interacting with, the world. For this reason, we employ the lens of ontological design. A key principle of ontological design is that as actors design the world around them, they are in turn designed by that world and its material artefacts and artificial environments (Willis, 2006). Interpreted for the current purpose: as actors make the world through a specific future orientation, the world acts back upon them in a specific way. Therefore, specific future orientations imply specific ways of being. The question of how someone can perceive and make the future is not a matter of preference, worldview, or opinion: it is bound up with the nature of who they are, as well as the various social, cultural, and political conditions that co-shape them. In this way, we understand the future orientations of actors to be ontologically conditioned.

To further understand how actors with diverse ontological conditioning become related, the understanding of ontology advanced in the field of science and technology studies is helpful (Nold, 2018). For example, Annemarie Mol uses

ontology to indicate how specific material artefacts enact multiple coexisting realities (Mol, 2003). This understanding of ontology points towards a radical plurality of co-existing worlds, rather than worldviews and perspectives. As diverse actors *enact* such different realities (Woolgar & Lezaun, 2013), we consider them to *make* emergent futures. Hence, diverse futures emerge through interactions between the artefacts and actors of a specific context (Wakkary et al., 2015). The negotiation of diverse emergent futures is then analogous to ontological politics (Law & Urry, 2004; Mazé, 2016; Mol, 1999), a term which Annemarie Mol uses to indicate that ‘the conditions of possibility [of reality] are not given’ (Mol, 1999, p. 75). The negotiation of Mol’s ‘conditions of possibility’ is analogous to the manner in which, in Ontological Future Making, individual future orientations of actors are negotiated to give rise to shared future orientations. This negotiation involves transforming the ontological conditioning that underlies such individual future orientations.

Importantly, Ontological Future Making takes the situatedness of the designer-anthropologist as a starting point. From this stance, an understanding of the full extent of coexisting realities cannot be taken for granted. Therefore, Ontological Future Making adopts a strong notion of uncertainty: uncertainty not just about possible futures, but also about what other worlds are presently co-existing, and uncertainty about historical events that are ontologically conditioning emergent futures (Bendor et al., 2021). For this reason, Ontological Future Making operates through a commitment to relationality. It is only through relationality that diverse realities can come into conversation to inform the construction of a shared reality. This commitment to relationality is informed by Arturo Escobar’s notions of ontological design and pluriversal politics (Escobar, 2020; Escobar et al., 2024). The situatedness and relationality of Ontological Future Making have further implications for the status of knowledge and practices of knowledge creation. Knowledge that is produced by situated future making practices is, first and foremost, relevant to the specific social and material context from which it emerged. Furthermore, the expression of knowledge *about* a context brings about *change* to that context - it acts upon it. In this way, the expression of knowledge is just another action that contributes to the making of futures, just like other actions. Ontological Future Making is not interested in knowledge *about* futures, nor in using such knowledge to challenge worldviews, shift mindsets, or conduct critical reflection. Rather, it considers

how acts of knowledge creation and expression, as well as other actions, *make* futures.

We will now further clarify this approach by delineating its three distinct steps. For clarity and simplicity, these steps are presented in a linear sequence. In practice, however, these steps are enacted in a non-linear way and may not be as easily demarcated.

Step 1: Understanding future orientations and their ontological conditioning

The first step is to understand the ontological conditions that enable and constrain the possibilities for individual actors to engage in future making. To identify these conditions, one must first understand how individual actors are oriented towards the future: what are their time horizons for planning, speculating, and acting? These *future orientations* of an actor are constituted by their mode of being in, and interacting with, the world, which therefore must be richly understood. Rather than treating people – and their future orientations – as objects of study, however, understanding is developed by building reciprocal relationships. By building trusted collaborations with the actors involved, as in ethnographic practice, one can develop an understanding of the ontological conditions that determine their future time horizons, including factors of social, cultural, economic, and political character.

Step 2: Identifying immediate tensions that emerge in the present

Step 2 engages with the negotiation of diverse futures in the present, focusing on the tensions that emerge as a result. As actors with diverse ontologies interact, their diverse short- and long-term future orientations become entangled. This entanglement is likely to give rise to challenges, incompatibilities, and misunderstandings regarding the possibilities for making shared futures. Such challenges manifest in the immediate present as tensions in social dynamics and negotiations. This step of the approach engages with issues as they emerge in the present, rather than extrapolating them into the future. Thereby, the goal is to bring direct focus to political contestations of emergent futures. Understanding these tensions, in turn, yields an understanding of the ontological conditions that constrain the possibilities for making shared futures.

Step 3: Transforming ontological conditions towards shared futures

The third step is to intervene in the identified ontological conditions, with a sense of direction rather than an ideal future outcome in mind. Through this intervention, the relations, positionalities, or capacities of actors may be transformed towards shared futures (Pink et al., 2022; Suchman, 2011). This kind of intervention constitutes *transformative action*. The specific purpose of transformative action depends on the situated needs of a particular context and is informed by the reciprocal relationships established in Step 1. The resulting transformations can be small, as long as there is a possibility for 'sustainment' (Fry, 2003). Immediate action must necessarily aim at a narrow goal: to transform the ontological conditions that currently inhibit the making of shared futures.

7.4 Methodology and Project Context

In this section, we describe the methodology used and the project context for the empirical part of this research. We mobilized the Ontological Future Making approach in a local energy transition project in Amsterdam Southeast. We conducted a longitudinal study, collecting data over four years from 2021 to 2025. The field for this study is constituted by a multi-stakeholder research consortium comprising universities, public institutions, businesses, and NGOs. We problematize all activities of this consortium, including meetings, co-creation workshops, and documentation, as part of our investigation.

Project context

Our case study concerns a multidisciplinary, multi-stakeholder project named the Local Inclusive Future Energy (LIFE) project. The project addressed problems in the local energy transition, which are both technical and social in character. Firstly, the project aimed to develop technological solutions to address the problem of congestion in the electricity grid. This is an urgent challenge in the Dutch energy transition that can have severe economic consequences and delay the transition to renewable energy, thereby undermining the targets set by the Dutch government for CO₂ reduction. Secondly, the LIFE project aimed at social inclusion. To achieve this aim, the LIFE project investigated how the proposed technological solutions could benefit the residents of a local neighborhood, known as Venserpolder. About 8500 residents live in this

neighborhood, of whom around 70% have a non-Western migration background. The neighborhood also faces complex and interconnected socio-economic challenges, including high rates of energy poverty. The municipality of Amsterdam had labeled Venserpolder as a 'development neighbourhood', signifying that the area requires more attention from policymakers to address local issues (Principenota Venserpolder: Verkenning van de Kansen Stadsdeel Zuidoost, 2020).

The lead partner of the LIFE project was the Johan Cruijff ArenA, the football stadium in the area, which maintains an 8,6 MWh storage battery to store solar energy and provide services to the grid operator. This battery served as a primary asset for experimentation with the proposed solutions to grid congestion. Other notable partners include the grid operator, several universities, the municipality of Amsterdam, and a local NGO named Stichting Co-Force.

Research aims and data collection

As partners in the LIFE project, the authors contributed to the aim of social inclusion as well as cross-disciplinary activities within the consortium. Whilst contributing to this aim, we also critically reflected on the project activities and intervened as we deemed necessary. We engage with the project context in its everydayness and problematize how the collaboration between the consortium partners and external participants was structured, whilst at the same time co-shaping this collaboration. In particular, we were closely involved in the efforts to engage residents from Venserpolder in the project. We collaborated closely with Stichting Co-Force, a local organization in Amsterdam that is funded by the municipality and supports local citizen initiatives in the energy transition.

Besides these aims, the activities served the purposes of research and data collection, for which we used several methods. We conducted ethnographic fieldwork as informed by design anthropology. We conducted participant observations (DeWalt & DeWalt, 2011) and analyzed project documentation as forms of data collection. We had collaborative autoethnographic reflections (Roy & Uekusa, 2020) within the research team to reflect on our own roles and positionality, and to interpret emerging insights from the research. Finally, we organized several co-creation workshops where we mobilized various design techniques for the dual purpose of facilitating collaborative engagements and gathering data. Since our priority is on how

these sessions were embedded in the greater process of community engagement, a detailed description of the workshop techniques used exceed the scope of the present paper. Although not exhaustive, Table 1 presents several key research activities where data were gathered.

Roles between the authors were distributed as follows. The first author took up the primary role in conducting the fieldwork, collecting data and engaging with stakeholders. The first and second author together engaged in data analysis, interpretation, and reflection. The third and fourth authors took up roles of supervision and project management, as well as giving feedback.

Data analysis through abductive reasoning

For data analysis, we mobilize abductive reasoning to draw inferences from the empirical data (Tavory & Timmermans, 2014). Abductive reasoning is a well-established approach that is suited for context-sensitive social research, where it is impossible to achieve a sufficient degree of repeatability and consistency in observations to apply inductive reasoning. Rather than producing tested and confirmed theory, abductive reasoning generates plausible hypotheses from surprising empirical findings (Tavory & Timmermans, 2014). With abductive reasoning, we embrace humility in our epistemic claims whilst being able to be more creative in our interpretations. We aim to demonstrate that Ontological Future Making is both a plausible and useful approach to engage with the kind of project context in which we were working, and make plausible suggestions and inferences regarding its broader relevance in the discussion section.

Abductive reasoning operates through an iterative back-and-forth engagement between theory, raw data, and interpretations (Tavory & Timmermans, 2014). We did this through individual and collaborative note-taking, diagramming, and collaborative discussions to compare emerging insights. Through this process, the identification of a literature gap, the delineation of the Ontological Future Making approach, and the curation of empirical accounts all co-emerge in a parallel, non-linear fashion. For the purposes of this paper, however, these aspects are structured in a linear fashion. This means that our empirical account has been written – and is intended to be read – through the lens of Ontological Future Making: it describes concrete empirical phenomena that illustrate and elaborate the abstract description in Section 3.

To illustrate this abductive approach, the following example might be helpful. In Section 5.1. we write the following passage:

As one local community leader said: “it is really important that you bring something to the neighborhood, as so much research has happened already, and little has changed for people in a tangible way”. This can be interpreted as a concern that the futures of the neighbourhood are only investigated, rather than made. These findings show how the future orientation of the residents is characterized by a need for persistent, permanent solutions for the long-term well-being of their neighborhood.

For reasons that are evident from this passage itself, we do not have access to a large number of data points to apply inductive reasoning to this empirical phenomenon – the phenomenon being, a local community leader expressing concerns about how research is conducted in the area. Hence, this quote must be interpreted on its own terms, considering its context of expression and the context of interpretation. Depending on one’s interests, the meaning of the quote can be interpreted in a variety of ways – it can inform an analysis systemic marginalization of particular social groups, ineffectiveness of public development programs, or the lack of participatory and co-creative research approaches. Given the present interest in future making, however, we interpret this quote through a temporal lens. The result is a plausible explanation that serves the present purpose of developing the Ontological Future Making approach.

Table 7.1: Non-exhaustive overview of key research activities

#	Date	Description
1	17-11-2021	Ethnographic field visit to Venserpolder 1
2	19-11-2021	Ethnographic field visit to Venserpolder 2
3	23-11-2021	Ethnographic field visit to Venserpolder 3
4	14-12-2021	LIFE project meeting - use cases 1
5	16-12-2021	Ethnographic field visit to Venserpolder community centers 4
6	21-12-2021	LIFE project meeting - use cases 2
7	24-01-2022	Ethnographic field visit to Venserpolder community centers 5
8	07-02-2022	LIFE project meeting - use cases 3
9	28-02-2022	Volunteering at Venserpolder community center 1
10	02-03-2022	Volunteering at Venserpolder community center 2
11	05-03-2022	Volunteering at Venserpolder community center 3
12	08-03-2022	LIFE project meeting - use cases 4
13	16-03-2022	Ethnographic field visit to Venserpolder 4
14	17-03-2022	Ethnographic field visit to Venserpolder 5
15	05-07-2022	LIFE project partner day
16	20-09-2022	Ethnographic field visit to Venserpolder 6
17	24-09-2022	Ethnographic field visit to Venserpolder 7
18	25-10-2022	Co-creation workshop with LIFE project consortium partners 1
19	28-03-2023	Co-creation workshop with LIFE project consortium partners 2
20	28-04-2023	Co-creation workshop with LIFE project consortium partners 3
21	16-05-2023	Co-creation workshop with LIFE project consortium partners 4
22	03-07-2023	Co-creation workshop with Co-Force and Venserpolder residents 1
23	25-09-2023	Co-creation workshop with Co-Force and Venserpolder residents 2
24	13-11-2023	Co-creation workshop with Co-Force and Venserpolder residents 3
25	22-01-2024	Co-creation workshop with Co-Force and Venserpolder residents 4
26	27-05-2024	Outdoor event Venserpolder 1
27	23-07-2024	Co-creation workshop with Co-Force and Venserpolder residents 5
28	28-08-2024	Co-creation workshop with Co-Force and Venserpolder residents 6
29	24-09-2024	Co-creation workshop with Co-Force and Venserpolder residents 7
30	28-09-2024	Outdoor event Venserpolder 2
31	29-10-2024	Co-creation workshop with Co-Force and Venserpolder residents 8
32	03-12-2024	Co-creation workshop with Co-Force and Venserpolder residents 9
33	07-01-2025	Meeting pioneer group Venserpolder 1
34	04-02-2025	Meeting pioneer group Venserpolder 2
35	28-02-2025	Meeting pioneer group Venserpolder 3
36	18-03-2025	Meeting pioneer group Venserpolder 4

7.5 Results

As in section 4.2.3, we report the empirical results under the three steps of Ontological Future Making. In doing so, we aim to show the connection between the abstract description and the theoretical phenomena. Whilst these results are written, and intended to be read, through the lens of Ontological Future Making, we emphasize again that the approach, results, and literature gap co-emerged in parallel, and that in reality, there is not the linear relationship as suggested by the structure of this paper.

7.5.1 Understanding future orientations and their ontological conditioning

In this section we describe the future orientations of diverse actors within the LIFE project and interpret how these are ontologically conditioned. In particular, we discuss the future orientations of the project's structure, the consortium partners, the residents of Venserpolder, and broader developments in the energy transition.

The LIFE project structure

Starting with the structure of the LIFE project, we first observe that the project lasts for four years. After these four years, the project and all its activities will formally come to an end, and the results and outputs must be delivered to the subsidy provider, the Netherlands Enterprise Agency. To maintain focus on this 4-year time horizon, regular meetings were held on a weekly, bi-weekly, monthly, and quarterly basis, where a project management team ensures that short-term activities build up towards the long-term goal. Work was divided into work packages, where representatives of various partner organizations work on specific outputs. Notably, the initial framing of the project already included an envisioned technical solution for the problems mentioned: the so-called "LIFE platform". In the project proposal, the platform was defined as follows:

"The key result of this project is a district-scale ICT smart energy management platform (LIFE) connected to a wide variety of energy devices/assets. This platform will strive for maximum societal acceptability by developing a technical and legal framework for local communities and stakeholders

to access the benefits of flexibility. The platform will monitor and control multiple devices, simulate the effects of control measures using a Digital Twin, and optimize flexibility with an intelligent algorithm while integrating with various energy markets. The platform will improve self-reliance on local clean energy, create financial value for flexibility, and engage locals in the process.”⁶

Overall, we interpret this pre-negotiated and pre-defined project output to ontologically condition all subsequent project activities. This conditioning is enacted through bureaucratic project management structures, including work package division and the required deliverables.

Social and technical partners

The LIFE project had a stark division between socially and technically oriented work packages, and these different ‘social’ and ‘technical’ partners, as they were referred to throughout the project, operated with distinctly different future orientations. From the beginning, the technical partners were eager to begin ‘building’ as quickly as possible, working towards the predefined output of the LIFE platform. In doing so, they exhibit a future orientation in which this future output lies ahead in linear time, assuming that they can strategize to realize this output in a controlled fashion. In contrast, the social partners, which include the authors, advocated for a distinct sense of openness and uncertainty. We argued that before significant progress is made with the technical solutions, the relevant local stakeholders should first be engaged and included in a participatory design process. In this, we exhibited a shorter-term time horizon that only encompasses the first iteration of the design process. This necessary step of reframing the problem-solution space would yield a greater understanding of stakeholder needs and ensure that the LIFE platform would be of benefit to them. We consider this difference in approaches between ‘social’ and ‘technical’ to be ontological, as it consists in a fundamental difference in modes of being in the world.

⁶ Project proposal – Local Inclusive Future Energy (LIFE) project

Venserpolder residents

The residents in Venserpolder were not included in the beginning of the project, and we undertook numerous activities with the aim of building relationships with them. Ethnographic field visits provided important insights into their future orientations. The fieldwork was a team effort of multiple researchers – Van Leeuwen and Singh report these ethnographic interactions in greater detail elsewhere (van Leeuwen & Singh, 2023, 2023), but here we highlight several key findings for our current purpose. We quickly learnt that people had historical experiences with the presence of researchers in the area, as well as other energy transition projects. Our presence was often met with suspicion, and people would ask very direct and informed questions, including about the origin of the funding for our research. Multiple people, especially local community leaders, said that researchers had frequently visited Venserpolder and that people had grown tired of filling out surveys, answering interview questions, and participating in projects⁷. From these challenges in engagement, we interpret two different future orientations of the residents.

One key concern of the residents was that many research projects don't result in tangible results and outcomes for the neighborhood, because the activities are discontinued when the project reaches its deadline. In their experience, researchers would visit to obtain data for publication, rather than make real improvements to the neighborhood. As one local community leader said: "it is really important that you bring something to the neighborhood, as so much research has happened already, and little has changed for people in a tangible way"⁸. This can be interpreted as a concern that the futures of the neighbourhood are only investigated, rather than made. These findings show how the future orientation of the residents is characterized by a need for persistent, permanent solutions for the long-term well-being of their neighborhood.

The people we spoke to were not very interested in topics of sustainability and energy transition, which they perceived as far-away problems. There were no households with solar panels in the neighbourhood, meaning the envisioned functionalities of the LIFE platform would be of little use to them. People's main concerns were the energy bill and their daily costs of living. One man expressed his discontent about how his energy bill became

⁷ Research activities 1-3, 5, 7, 9-11 (see Table 1)

⁸ Anonymous – Research activity 17 (see Table 1)

much more expensive after his apartment building was retrofitted with a new heating system, even though a lowering of the costs had been promised⁹. Given the socio-economic challenges in this neighbourhood, people reported to be 'too busy paying the bills' to invest time in participating in research. We interpret the second future orientation here, which is conditioned by the daily, weekly, and monthly routines of regular workaday life. These are short-term time horizons that thoroughly constrain the residents' capacity to participate in longer-term projects, especially projects with a significant degree of uncertainty. The significance of this short-term time horizon is underscored by numerous structural societal challenges and inequalities that the residents are dealing with. These challenges, including a lack of social cohesion, historical and present-day racism, and high levels of illiteracy, make it difficult for residents to perceive a long-term future where these issues are resolved.

Energy transition developments

Finally, we identify the future time horizons of the energy transition, which are enacted through long-term timelines of policy agendas, technological innovation, and regulatory change. These structural developments ontologically condition all other activities taking place in the LIFE project. On the one hand, there are long-term government ambitions to be CO₂-neutral by 2050, which shapes the pace and trajectory of the energy transition. On the other hand, there is the urgent and pressing problem of grid congestion, which is threatening short-term integration of renewable energy, business activities, and real estate development. Furthermore, certain envisioned technological solutions related to the LIFE platform - including Peer-to-Peer (P2P) energy trading and local energy markets (Campos & Marín-González, 2020; Sousa et al., 2019) - are future innovations in an early stage of development, and dependent on regulatory and systemic change. Despite the uncertainty about their future viability, the potential promises of these innovations shape the research activities in the LIFE project to a significant extent. At the same time, the neighbourhood of Venserpolder is dealing with energy transition developments on an entirely different timeline - the pressing issue is the renovation of apartment complexes, for which smart energy innovations are entirely irrelevant.

⁹ Anonymous - Research activity 5 (see Table 1)

7.5.2 Identifying immediate tensions that emerge in the present

In this section, we describe how the future orientations identified above are entangled and negotiated. We do so by drawing attention to the immediate tensions that we encountered in the field. We describe these tensions in two sub-contexts: in the collaboration within the LIFE project consortium, and in the participatory engagement with the Venserpolder residents.

Collaborative tensions in the LIFE project consortium

In the 2021-2022 timeframe, many efforts were made to align predefined project outcomes and planning with the diverse future orientations of project partners, as well as present concerns in the local context¹⁰. These efforts gave rise to distinct tensions. On the one hand, the technical partners argued for the need to tightly define a technological solution as well as a strategy to realize it. On the other hand, the social partners advocated for the need to remain open to emergent needs of local stakeholders, especially residents who were not involved from the beginning. From the perspective of the social partners, the definition of the LIFE platform given above implied that the social inclusion research is taken as instrumental to the engineering work. Only “maximum societal acceptability” is mentioned as a societal goal, and that “local communities [should] access the benefits of flexibility”. A general perception was that the project proposal was weighted towards the technical side of the project, with technical solutions like the “digital twin”, “grid management system”, and the “MultiMarketModel” having a central role.

Many discussions around these issues took place concerning the ‘use cases’ of the LIFE platform¹¹. These meetings were tedious: it seemed impossible to align the logics and methods of technical and social partners in one integral approach. Because of the apparent incapability of creating collective ways of working, partners deferred to the work structure and goals that were pre-defined in the project proposal. As a result, issues of managerial, logistical, and organizational concern dominated project meetings and conversations. One example of this is the Inclusion and Engagement Plan, a key first-year deliverable for the social partners. The plan would outline the project’s strategy for engaging and including local stakeholders, especially

¹⁰ Research activities 4, 6, 8, 12, 15 (see Table 1)

¹¹ Research activities 4, 6, 8, 12, 15 (see Table 1)

residents. Conversations around this deliverable often concerned the structure, roles, and responsibilities with regard to the writing of the document, rather than the content of the actual activities that would take place (Ahmed, 2007).

The derailment of content discussions by a focus on managerial issues indicates a key tension. On the one hand, we observe a tendency to linearize the process of engaging the residents and to force-fit a complex and emergent process into the project structure. However, we suggest there is more to this observation. Discussing the futures of the project in themselves seemed impossible as partners' attention was continually drawn to the present tensions. Rather than considering this as a deficiency, we regard the observation as informative: evidently, the present ontological conditioning of the project was not conducive to long-term planning. The focus on logistical and organizational matters and the tendency to defer to the original project proposal represent failed efforts to transform these present conditions.

Research extractivism and reciprocity with Venserpolder residents

As described in step 1, there were distinct disconnects between the envisioned outcomes of the LIFE project and the needs of local residents. When we explained the LIFE project to local residents, they rightly realized that project outcomes were already prenegotiated to such an extent that it could not cater to their needs: their futures were already being made without their involvement. Furthermore, our ethnographic intervention in this area was – apparently – part of a greater trend of researchers frequently visiting this area, presumably because of Venserpolder's status as a 'development neighborhood'. 'Development' can here be understood as a form of future making conditioned by bureaucracy: by policy agendas that were constructed without direct involvement of the residents. Residents perceived these interventions to be insufficiently reciprocal and insufficiently contributing to the making of a desirable future for their neighborhood.

Whilst the LIFE project had a four-year time horizon, some residents live in the neighbourhood for a lifetime. The LIFE project was temporary and oriented towards deadlines, creating a sense of urgency to make progress and 'obtain the data'. At the same time, residents desire persistent and permanent solutions in their local living environment. This need constitutes a distinct challenge to the design anthropological openness to uncertainty, as collaborating with the local residents seemed to require some sense of certainty

and control around the future outcomes of the research. At the same time, without the openness to emerging insights from the fieldwork, this realization would have gone unnoticed.

This tension has a further dimension in the distinction between ‘expert’ and ‘participant’. Whilst we and our colleagues, the ‘experts’, worked on this project as part of our profession, local residents would be expected to participate as volunteers, investing time on top of their regular paid and unpaid work. Here, the distinction between ‘expert’ and ‘participant’ is exposed, not merely as a definitional matter, but through institutionalized distribution of time and resources (Turnhout et al., 2020). In temporal terms, the experts are afforded the opportunity to work on long-term societal interests whilst also meeting their own short-term needs, whereas the residents are not. Given the strong uncertainties about how future energy transition pathways and agendas will play out, as well as the speculative nature of the subject matter of the LIFE project, it was impossible to promise people that the outcomes would definitely benefit them. These outcomes were dependent on factors beyond our control, and still many years out, in tandem with the pace of the greater energy transition.

7.5.3 Transforming Ontological Conditions towards Shared Futures

Building on the tensions described above, this section describes the actions we took to transform the ontological conditions that constrained the possibilities for future making, and the ways in which these actions were – or were not – successful. An important pivot was made in the LIFE project in late 2022¹². The team dropped the assumption that the technological LIFE platform would cater to all user needs – evidently, it turned out to be a form of technological solutionism (Morozov, 2013; Tironi, 2018). The need for this pivot was strengthened by the challenges in engaging local stakeholders. The main focus of the project shifted towards local governance in favor of technological innovation. In a series of co-creation workshops between late 2022 and mid-2023¹³, organized by the authors, project discussions centered around how a local organizational structure and decision-making procedure could be

¹² Research activity 18 (see Table 1)

¹³ Research activities 18-21 (see Table 1)

established that would enable local stakeholders to collaborate. These collaborations were discussed with regard to both their present and future enactment, which shows a reorientation from future outcomes towards present actions.

Transforming ontological conditions in the LIFE consortium

As an example of these efforts, one of the workshops was aimed at co-creating a novel “Local Energy Institution, which governs the generation, distribution, and exchange of value”. We used this definition to explicate the political dimensions of the future that the project was making, and bring such contestations to the forefront. Hitherto, these political dimensions were implicit in the techno-economic framing of the envisioned outcomes. In the workshops, the consortium partners engaged in a collective visioning process to imagine how such an institution could address joint challenges of grid congestion and social inclusion. For the present purpose, the goal is not to elaborate on the content of these future imaginations, but rather to point out that this visioning process transformed the present ontological conditioning of the consortium. Whilst the content of the workshops concerned envisioning distant futures, the meaningful impact consists in the fact that project partners could enter into a new mode of collaboration. Explicitly discussing these issues of future collaboration and organization also shifted the present focus of project partners towards the present manifestation of these aspects. Before this shift occurred, the challenges in engaging local stakeholders were merely understood as barriers towards future goals that lay ahead in linear time. After the shift, these immediate challenges came to the forefront as the core concern of the project. This process of reframing was accompanied by a restructuring of the work package structure of the project, as well as a reallocation of resources to support the participation of residents in Venserpolder.

An energy community as a foundation for making shared futures

Regarding the neighbourhood of Venserpolder, the question became: how can local residents work together to make collective decisions about their local energy system? Quite quickly, the project partners agreed that this could take the form of an energy cooperative or energy community. Energy communities are recognized energy system entities in the European Union, and are becoming established as meaningful organizations for citizens to gain local control over

their own energy provision (Bauwens et al., 2022). At the same time, an energy community would provide sufficient capacity for organization, governance and coordination, so that grid congestion problems in the neighbourhood could be addressed. Hence, this initiative could address concerns of both the social and technical partners. Stichting Co-Force, the local foundation, took the initiative to establish the energy community in Venserpolder, whilst we took up a supportive role.

Since the most important concern of local residents was the high energy bill, the main purpose of the energy community became to reduce the energy bill. This could be realized, for example, by installing solar panels in local ownership and distributing the revenues within the community. At the same time, it was questionable whether local residents would be prepared to take up a project of such complexity by themselves. After all, the ontological conditions constraining their future making capacities were still in place. Together with Co-Force, we decided that it would be fair to provide local residents with an hourly compensation for their participation in this project. By doing so, residents would be afforded the same opportunity as professionals: meeting their short-term needs whilst contributing to longer-term societal interests. With this measure and the close involvement of Co-Force, it became easier to establish collaborations with the residents.

Between late 2023 and late 2024, we organized nine co-creation sessions with a group of local residents, as well as two outdoor events in the neighborhood¹⁴. The organization of the sessions was somewhat improvisational, with aspects such as the location and number of participants often changed at the last minute. We found that structured participatory techniques aimed at predefined outcomes to be counterproductive – it was more constructive to engage in open and organic conversation, whilst improvising with the use of a few simple co-creative exercises. When it came to co-creating the vision for the energy community, a careful balance had to be struck between envisioning distant future possibilities and acknowledging constraining conditions in the present. If we focused excessively on the potential future opportunities, the initiative would come across as unrealistic and utopian: as one participant put it, “If you are too ambitious or creative, it will scare people away”¹⁵. On the other hand, dwelling too much on the barriers and challenges

¹⁴ Research activities 22-32 (see Table 1)

¹⁵ Research activity 27 (see Table 1)

would inhibit constructive progress. Approaching the sessions with a design anthropology perspective, we aimed to bring concerns of a social and human character to the forefront. We quickly realized, however, that participants were more interested in technical data, financial calculations, and other techno-economic information. We interpret that the participants regarded such information as more actionable and useful than matters of a social character.

Throughout this engagement process, we learned what the core of transformative action consisted of in this case, which we recognize in two categories. On the one hand, there is the necessity of building relations, networks, and collaborations between relevant actors. This work especially falls to key figures who are in the center of local networks, such as leaders of local community centers and board members of local homeowners associations. While anticipation of new collaborations opens up a view towards new, shared futures, their realization is equal to the making of shared futures. The second type of transformative work involves mobilizing resources to support such collaborations. This includes economic, epistemic, and technological resources. The availability of such resources opens up possible futures that were not possible before. Both collaborations and resources are important factors in transforming the ontological conditions that determine future making. The energy community in Venserpolder would do both: provide a place for community-building and collaboration, as well as an organization to harness collective ownership over resources.

Whilst the LIFE project has formally ended at the time of writing, a local pioneer group of nine residents wishes to take the project further. The authors continue to collaborate with this group to assist and support these efforts.

7.6 Towards more Direct, Political, and Relational forms of Future Making

This section discusses the broader implications of our findings for how scholars and practitioners can engage in future making.

Firstly, we argue that transformative forms of future making should become more direct by focusing on immediate issues in the present rather than extrapolating them into the future. The purpose is to avoid the attempt to grasp and control systemic societal challenges in their totality: this effort is bound to fail or have adverse consequences. In contrast, the purpose is to iteratively and

locally transform societal challenges, in the context where they are encountered and enacted. This direct focus on immediate issues is both a modest and ambitious form of future making. It is ambitious in the sense that it aims to directly address the most difficult challenges it is confronted with, and holds that transformation is possible. It is modest in the sense that it acknowledges that such challenges can only be transformed in the most local and iterative manner. Furthermore, whilst speculation, conceptualization, and imagination of futures still have a role, this is only to the extent that it inspires local action. Direct forms of future making do not aim to merely change worldviews, assumptions, and perceptions – it aims to go one step further.

If future makers should intervene in worlds that are emerging, they should therefore be more pioneering, agenda-setting, and political. In this way, future making becomes inherently value-laden rather than value-free, which echoes recent work (Comi et al., 2025). Another way to understand this is what Gatt & Ingold call the next twist of the reflexive turn: “the anthropologist’s deliberate and reflexive participation in the production of artefacts” (Gatt & Ingold, 2013, p. 154). In this paper, the artefact in question was the local energy system and its entanglement with local sociopolitical conditions. Whilst the proposition to become more political might sound radical, it is a logical consequence of the observation that researchers, designers, and practitioners of future making always already have an agenda. Transformative forms of future making require that we recognize the ways in which such agendas challenge or reproduce structural inequalities or injustices (Halse & Clark, 2008, p. 144). Hence, future making should directly engage with issues, structures, and dynamics of power. Aspects such as the politics of collaboration and participation, which were central to the LIFE project, should not be externalized as out-of-scope, but rather taken as internal and constitutive to the process of future making, and iteratively transformed.

One process by which the politics of future making take place, is through the negotiation of promises, expectations, possibilities, and uncertainties. While anthropologists have empirically studied such diverse temporal orientations (Bryant & Knight, 2019), future making requires that we build capacities to negotiate them in practice. One tension identified in this paper is between the uncertainty of long-term structural issues, such as energy transition agendas and pathways, and pressing short-term needs, such as people’s livelihoods and grid congestion problems. Collaborative forms of future making require that

both short- and long-term temporalities are integrated in the present. The point here is not that long-term futures should be ignored in favor of immediate needs, as some authors have cautioned against (Shamiyeh, 2016). Rather, we argue framing futures as long-term, distant temporalities distracts from present action, where they can be transformed and realized.

In our research, the negotiation of future orientations was inherent in the process of building relations with the residents and other stakeholders. Hence, we further highlight the importance of relationality. To build trust, it was necessary to continually go back and forth between emphasizing hope on the one hand and realism on the other. At some moments, there was a need to emphasize that more desirable worlds are possible and to concretize shared futures using design techniques to make them tangible, appealing, and engaging. At other times, there was a need to clearly articulate the structural barriers that could very well hinder the realization of such worlds, and to emphasize that the imagined futures are likely ideal states that may not be fully realized in practice. Based on these findings, we suggest that future makers should become brokers of hope and possibility, as well as realism and skepticism. We suggest that there is potential for developing approaches and strategies that leverage such capacities. Future making requires articulating and giving form to desirable future outcomes, as well as acknowledging that difficult challenges hinder the realization of these outcomes.

Furthermore, we observe that an acknowledgement of uncertainty by itself is not enough: to build trust with collaborators, it is important to provide some degree of certainty. On the one hand, this concerns the availability of sufficient resources for an appropriate period. If the futures of, for example, a vulnerable neighborhood are at stake, there must be some degree of certainty around the possibility of safeguarding financial support. Perhaps even more importantly, however, is certainty about the futures of the collaborations and relations established: that collaborators can place trust in the sustainability of interaction towards the future. If we recognize that we are active agents in future making, we can acknowledge that, while we cannot provide certainty about future outcomes, we can provide certainty about our own intentions and actions. This is especially important when working with vulnerable groups. An embrace of fundamental uncertainty is a privilege reserved for those who already possess, for example, certainty of future income, housing, and opportunities.

Finally, reflexivity was an important aspect of our approach, and we argue it should be central for any practitioners of future making. Undertaking transformative action requires that our own ontological conditioning, including our role, positionality and commitments, is at stake. The transformations in the LIFE project were co-enacted with our own transformation, in particular our role as academic researchers. The problem of extractive research meant that we had to face how our own role might be part of the problem, rather than the solution. Publication pressure, epistemic norms about what makes high quality research, and the bureaucratic structuring of our contribution to LIFE project deliverables were all external factors that contributed to the risk of re-enacting extractive research. Given the power of these external constraints, we consider them to ontologically condition our own future orientations. To engage in transformative future making this ontological conditioning had to be transformed - a felt and embodied process that involves a reorientation of our own identity. As a result, we ended up taking on roles that were more akin to being an advocate, mediator, and even an activist. Because these transformations opened us up to the formation of new reciprocal relations, they are already - however small - iterations in the process of making shared futures. Overall, it is through this reflexive practice that we find that a focus on 'ontology' is required, as this concept points towards the fundamental nature of the transformations that are at stake. Transformative action requires that we not only recognize the limitations of our situatedness, but also act intentionally to broaden it.

7.7 Concluding Remarks

Ontological Future Making builds upon the strengths of existing design anthropology approaches, whilst adding a crucial element of transformative action. We regard transformative action as taking the design anthropological notion of intervention one step further: intervention should not be instrumental in the production of knowledge, but in the creation of shared futures that emerge from reciprocal collaborations, addressing societal needs. This occurs by transforming ontological conditions, both internal and external, that inhibit such shared futures. Accordingly, we prefer to position Ontological Future Making as a 'style of acting', as compared to the positioning of design anthropology as a style of knowing (Otto & Smith, 2013).

Of course, the Ontological Future Making approach also has limitations. The approach is not useful in cases where there is already an established social collective, team or community – rather, it excels in contexts where this collective of stakeholders has not yet been assembled, and is iteratively constructed. Furthermore, because of its openness and focus on contestation, Ontological Future Making is not suitable if there are certain pre-determined desirable outcomes, which should be realized in a controlled fashion. Also, with its focus on politicization and contestation, Ontological Future Making might result in conflict and disagreement between stakeholders. Whilst we consider this an advantage and often necessary step, it might not be suitable in all cases. Overall, Ontological Future Making is most suitable for contexts that are characterized by a high degree of uncertainty and ambiguity, as opposed to highly stable, controlled and predictable environments.

To facilitate others' constructive building upon this approach, we propose several directions for future research. For example, there might be a generative convergence between 'acting' and 'making', which has already been of interest to design anthropologists (Ingold, 2013). Furthermore, we suggest that future work can constructively investigate the intersection between future making and relationality (Escobar et al., 2024; Udoewa & Gress, 2023). Established design approaches, such as infrastructuring, can offer valuable insights in this regard (Agid, 2016; Bossen et al., 2014). Furthermore, the notion of transformative action has also been mobilized in literature on transitions and social innovation, which might provide fruitful (Nevens et al., 2013). Finally, we propose that issues of power, as they emerge in collaborative, multi-actor future making practices, should be more central (Avelino, 2017).

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PART IV

Transforming Power Relations in the Energy Transition

This part contains two chapters which, unlike the previous chapters, engage with the concept of power directly. As such, this part is integral to the overarching aims of this dissertation, and provides insights specifically into the different kinds of power relations that were encountered, how these can be understood, and how they were transformed. In empirical results, this part provides specific detail as well as higher-level overview of power relations in the LIFE project and in Venserpolder.

CHAPTER 8

Chapter 8 is named *Design Anthropology for Transforming Power Relations in Societal Transitions*, and is, at the time of writing, under review for publication in the *Public Management Review* journal, as part of a special issue on *Design for Societal Transformations: Exploring the Potential of Design for Tackling Wicked Problems*. This chapter provides a conceptual overview of the relationship between power and design, and reports on three empirical examples from the fieldwork to position design as an approach for transforming power, with the purpose of supporting societal transitions and transformations. Given that the theory overlaps with Chapter 3, I will here focus on the empirical findings.

Agency

For each of the three examples, the paper describes a design intervention that can be considered as an act of agency. First of all, we describe how we framed the 'Social Platform', an envisioned LIFE project outcome that would address resident needs, as a 'Local Energy Institution', with the aim of politicizing the project activities. Secondly, we describe how we exercised agency to initiate reciprocal relations with local residents. This was a response to an ambiguity of ownership with regards to the initiative of establishing a local energy community: we had initiated this project, meaning that ownership – i.e., agency – resided with us. It was desirable to transfer this ownership to the residents, hence we exercised agency to this purpose. Overall, it becomes clear in this paper that agency is a means towards positioning design as a political activity, which can challenge, distribute, and transform power. This doesn't mean that the notion of 'solving problems' is completely discarded – rather, it becomes only one small part of a greater aim.

Relationality

This paper conceptualizes power as a fundamentally relational phenomenon, and positions power relations as the key phenomenon of interest. Hence, relationality is very much central in this paper, where various aspects are emphasized. Importantly, a designers' position is characterized as a mediator, facilitator, and middle person that can 'link up' two other actors for the benefit of both. The designer can do so by building trust with both parties, gaining insight into their needs and capacities, and interpreting whether a reciprocal

collaboration is possible. In doing so, a designer's own agency, and commitment to particular values, must be balanced with a certain pragmatism where the needs of all parties are addressed to a satisfactory degree. Another crucial aspect is that, in the context of transitions where there is a diversity of heterogeneous actors, power relations will never be balanced. In acknowledging this fact we challenge a plethora of research which aims at 'balancing' power. Instead of balancing power, the aim should be for designers to explore how they can work with power asymmetries in a constructive fashion. We characterize this as power-work. Finally, we describe the in-between space between two actors as a locus of designerly agency and intervention, where power-work can be performed. This can be as simple as encouraging an interpersonal conversation, or as complex as building inter-institutional networks.

Scale

Scale is a key element in this paper, which foregrounds power relations between citizens and institutions. Whilst this is not the only type of relevant relationship in transition context, it is perhaps the relationship where power asymmetries are the starkest, a power asymmetry which essentially derives from a difference in scale. In particular in the case of governmental institutions, this power asymmetry is perhaps not one that is meant to be balanced, as the point of such institutions is that they have a degree of power that citizens do not have. At the same time, citizens can work together to form their own institutions - such as energy communities - whereby they can act on a similar scale as other institutions, including universities and businesses.

Temporality

Temporality is not a major dimension in this paper. One thing that can be emphasized, however, is that acts of transforming power relations, as positioned in this paper, are small intermediate steps in the greater evolutionary process of transition design. This is the case for all three of the different interventions that are described in this paper. Societal transformation is then what this evolutionary process amounts to when extrapolated across greater scales and timelines. The importance of emergence, uncertainty and openness is underscored by this, as it is only through this acknowledgement that an extended continuation of the transformative process may be envisioned.

Abduction

Abduction is not a particularly important dimension in this paper, besides the recommendations under the heading of *What is the entity 'to-be-designed'?* To-be-designed entities, as the products of design abduction, are positioned as fundamentally intermediate and relational entities, whose purpose consists in opening up further pathways and possibilities for transformation. For this reason, the nature of 'designs' should be regarded as political, and should be regarded as the outcomes of design agency. As mentioned in the paper, a key capacity of the designer is to decide which pathways the design should 'close down', through materialization of particular relations, and which should be left open for emergence.

CHAPTER 9

Chapter 9, named *Conceptualizing Power Relations in Local Energy Transitions: A Design Anthropology Approach in Amsterdam Southeast* is, at the time of writing, being prepared for publication in the journal *Energy Research & Social Science*. As such, this is the only chapter which directly engages literature from energy research, and which is intended for publication in a journal of energy research. The chapter provides a framework that conceptualizes power relations in a new way, and it does so by combining power theories with insights from economic anthropology – specifically, the concept of reciprocity. Through this combination, power relations are taken as the analytical phenomenon of interest in this chapter. The chapter provides an extensive empirical reporting of the LIFE project, by focusing on the relations between Venserpolder residents and various other actors. By applying existing theory to the empirical data, gaps are identified, which inform a new framework on power relations.

Agency

Agency is not explicitly a central concept for this chapter. Agency, as the capacity to engage in value-laden action, is implicit in – and encompassed by – the definition of power relations as the interdependencies in capacity for action. As such, the empirical descriptions of power relations in the LIFE project implicitly also diverse ways in which agency was exercised.

Relationality

With power relations as the main focus, relationality is a core dimension in this paper. The conception given in chapter 2 is taken as a starting point: power relations as the interdependencies in capacity for action, which are situated and dynamic. This definition is enriched in several ways. Firstly by building on concepts of power-over and power-with, which are taken as key types or aspects of power relations. Secondly, by drawing from the field of economic anthropology, which investigates how social and communal relations are co-constituted with diverse forms of economic exchanges. More specifically, the chapter draws from the distinction between generalized, balanced, and negative reciprocity. These terms signify how different relations can be characterized by dynamics which are respectively solidary, transactional or extractive.

These concepts are mobilized in the empirical reporting, to describe the diverse types of power relations and exchanges which were encountered in the study. The findings are distinguished in five relational categories, as the relations between residents and other actors are investigated. These actors include researchers, large asset owners, other neighbourhood actors, the municipality and the grid operator. Using the terms of power and reciprocity, this chapter describes findings at a slightly higher level of abstraction than most of the other chapters. As such, some of the empirical detail is lost, but a higher-order understanding of power relations is achieved.

There appears to be an overlap between power-over and power-with on the hand, and the different types of reciprocity from economic anthropology on the other - for example, power-over appears to relate to negative reciprocity. Therefore, based on the empirical reporting, this chapter provides a novel framework for conceptualizing power relations. This framework makes an explicit distinction between *symmetric* and *asymmetric* power relations, and for each of these, hypothesizes what power relations may look like when characterized by different forms of reciprocity. As such, the resulting framework provides a typology of power relations which enrich the commonly recognized distinction of power-with and power-over.

Scale

Scale is an important dimension in this paper as it explicates symmetric and asymmetric power relations. While the question of power symmetry is not exclusively one of scale, and a difference in scale does not always imply a power

asymmetry, there is certainly an overlap. This chapter reports on relations between residents and larger organizations, such as businesses, universities, the municipality and the grid operator, where the latter typically operate at a higher level of scale than households. Even though such power relations are likely to be asymmetric, they can still be characterized by any one of the three types of reciprocity – generalized, balanced or negative. By making this distinction, which relates to matters of scale, the framework proposed in this chapter contributes new insights on power relations.

Temporality

Temporality is not a major dimension in this paper. As part of the design anthropology approach, it is mentioned that power relations are engaged in their existence, emergence and envisioning. Whilst this distinction is not analytically explicated in the findings, it would be meaningful to pursue this avenue in future work.

Abduction

Abduction is not discussed at length in this paper beyond the notion that abductive reasoning is used. While this concerns the epistemological dimension of abduction and not its implications in terms of power, it is worth mentioning here that the findings and outcomes reported in this paper are a good representation of how abductive reasoning works. The use of the terminology of power and reciprocity in the findings (i.e. the cursive phrases) represent how granular and detailed social dynamics were abstracted into higher-order concepts, where some detail is lost, but a bigger picture narrative emerges. Likewise, the different types of power relations which are distinguished in the framework are also the products of abductive reasoning. They emerge from the observation of specific gaps in the empirical findings which could not be explained with existing terminology, but their epistemic significance remains at the level of hypothesis, rather than tested theory.



8

DESIGN ANTHROPOLOGY FOR TRANSFORMING POWER RELATIONS IN SOCIETAL TRANSITIONS

This article¹⁶ makes the argument that design can serve the purpose of transforming power relations in societal transitions. The article conducts a theoretical review of diverse theories of power and their relationship to design, whereby it considers aspects of agency, relationality and scale. Based this theoretical review, and using a design anthropology approach, a theoretical framework is defined for the empirical study of power. The framework is operationalized in an empirical study of a local energy transition project in Amsterdam Southeast. In this empirical study, we describe three power relations that were encountered, the design interventions performed, and the transformative outcomes of these interventions. Based on the findings, the broader implications for the role of design in societal transitions are discussed.

¹⁶ This article is under review for publication in *Public Management Review*

8.1 Introduction

Design approaches are gaining attention as a promising option to address complex societal challenges - including environmental degradation, technological disruption, and exacerbating socio-economic inequalities (Irwin et al., 2015). While societal challenges are commonly understood through theoretical frameworks such as sustainability transitions, complexity theory and the multi-level perspective (Geels, 2005; Köhler et al., 2019; Kok et al., 2021), there is a sense among scholars they do not provide a sufficiently nuanced perspective on the role of power, contestation, and politics (White, 2015). Since design engages with the transformation of political worlds in their work (White, 2015), design might be well positioned to develop this understanding. At the same time, design research itself also does not have sufficient methodological and conceptual tools to understand the issue of power (Tomasini Giannini & Mulder, 2022; Van Der Bijl-Brouwer, 2022). This paper makes a contribution at this intersection, by providing a framework that serves to understand the relationship between design and power in the context of transitions. This framework is operationalized, and its broader implications for the literature are explored. With this contribution we respond to various calls in academic literature, including the need to more clearly articulate the value of design in the public sector (Van Der Bijl-Brouwer, 2016), to understand micro-politics in transitions and public management (Avelino et al., 2016; Van Buuren et al., 2020), and to broaden the range of interdisciplinary tools for collaborative public innovation (Torfing, 2019).

The scope of the investigation is framed by the formulation of both a research aim and a research question. The research aim, which frames the theoretical review, is to *explore the potential of design to contribute to societal transitions by engaging with power*. As such, this aim serves the purpose of gaining a broad sensitivity to the manner in which issues of power have been addressed in design research and adjacent fields, such as public management. Since power is a topic with a broad scope, this theoretical review is necessary to establish a theoretical framework which is mobilized in the empirical study. For this empirical study, this article makes use of the specific approach of design anthropology. Accordingly, the research question for the empirical study is *How can design anthropology transform power relations in a participatory and multi-actor project?* The empirical study is conducted in a local energy transition project in Amsterdam Southeast, which was organized by a multi-

actor consortium consisting of research organizations, public institutions, commercial actors, and citizen actors. We use an action-based approach to identify three key power relations in this project, and describe, using the framework, how we understood, intervened in, and partially transformed these power relations. Based on the findings, the article returns to both the research question and research aim in the discussion section, and explores the broader implications of our concrete findings.

8.2 Theoretical Review

In this section we review relevant theories on power, and discuss how these relate to design, societal transitions, and the domain of public management. This review is guided by our research aim of *exploring the potential of design to contribute to societal transitions by engaging with power*. To structure this review, we distinguish between three distinct aspects of power: 1) power as agency, 2) relationality of power and 3) scale. We argue that these concepts of agency, relationality and scale are necessary to understand how power works, and can be exercised, through design in the context of societal transitions.

8.2.1 Power as Agency, Design as Problem-Solving

The first perspective of power as agency considers power as an individual capacity of actors. A consideration of agency serves to understand power from the situated positionality of the designer, before discussing the more complex, relational view of power. A key definition of agentic power is provided by Avelino & Rotmans (2009), who define power as “the ability of actors to mobilize resources to achieve a certain goal” (Avelino & Rotmans, 2009, p. 550). Actors can be individuals, institutions, communities or companies, and the resources they mobilize can be economic, technological, or epistemic in nature. Other relevant conceptions include Ahlborg’s notion of action-theoretical power (Ahlborg, 2017) and Lukes’ definition of power-to as “being able to make or receive any change, or to resist it” (Lukes, 2021, p. 69). Whether the exercise of agency needs to be intentional or not is a contested point - see Giddens (1984) and De Haan & Rotmans (2018) for two opposite perspectives on this.

If power as agency is regarded as the human capacity for action, the next step is to consider the actions that feature in designerly practice. The agentic definition of power is closely associated with the definition of design as the

practice of “devising artefacts to attain goals” (Simon, 1996, p. 114), as well as the view that design is a problem-solving practice. As designers aim to change existing situations into preferred ones, they intentionally mobilize tools and strategies to achieve particular goals and outcomes, which may hence be regarded as an exercise of power. In the context of societal transitions, a particular capacity that has been attributed to designers is the capacity to address ‘wicked problems’ (Bender-Salazar, 2023; Buchanan, 1992). Wicked problems are characterized by the fact that they defy framing and definition, are place-bound and context-specific, situated in complex multi-stakeholder collaborations, and do not have a clear solution (Head, 2008; Rittel & Webber, 1973; Sovacool, 2016).

Since wicked problems cannot be straightforwardly solved, they challenge the problem-solving frame of design. Some argue that the general frame of ‘problem-solving’ should be problematized (Morozov, 2013), whilst others argue that the aim of solving wicked problems stands in the way of transforming society (Coops et al., 2022). Furthermore, the complexity of wicked problems exceeds the cognitive capacity of single design agents (Dorst, 2019a), and problems in the public context do not have a clear problem owner (Van Der Bijl-Brouwer, 2016). For these reasons, the problem-solving framing of design falls short in the context of societal transitions: the agency of designers must entail other forms of action.

Beyond mobilizing tools and strategies to achieve outcomes and solve problems, other competencies of designers include reframing, formgiving, integrating and orchestrating (Van Arkel & Tromp, 2024). Rather than a following of steps – which is a key pitfall of some forms of design thinking (Laursen & Haase, 2019) – such competencies are ways of acting which are situated in social environments. Capacities such as orchestrating and integrating necessarily have a social component, as they pertain to the collective organization and mobilization of relevant stakeholders. It is by leveraging their social capacities that designers enter the domain of power: designers position themselves in relation to diverse actors which pursue different interests and goals. Hence, there is a clear relevance of design to other framings of agentic power, such as “the (in)capacity of actors to mobilize other actors, resources and/or institutions to achieve outcomes” (Avelino et al., 2024, p. 531), or as the capacity to influence other actors and shape structures (Arts & Tatenhove, 2004). Hence, the agency of designers pertains to the ways in which they affect the agencies of other

actors. From this observation, the second dimension of relationality naturally follows.

8.2.2 The Relationality of Power, and Design in the Public Domain

Power understood as agency provides a useful, but only partial, perspective to understand how designers can effect change of political significance. A more comprehensive perspective is that power is a relational phenomenon, which means that power resides in the intersubjective and transindividual space between actors. A key definition, which incorporates agency, is that power is a relational capacity to act (Nightingale & Ahlborg, 2018). Adopting the relational view, this article focuses on relations between actors as *power relations*, which are defined as the *asymmetries in capacity for action*. Such asymmetries can consist in various factors: unequal distribution of resources, the differential influence of social structures or institutions, or other contextual particularities. The understanding of power relations may be elaborated using the distinction between ‘power-over’ and ‘power-with’ (Avelino, 2021). Whereas power-over is associated with relations of domination, oppression and conflict, power-with signifies a consensual form of power, where two actors work together for a common purpose (Haugaard, 2012). Working with power relations comes with certain internal contradictions, as one’s own positionality becomes part of the equation (Nightingale & Ahlborg, 2018). This underscores the need for engaging with power from the situated positionality of the designer.

Power relations, in both consensual and conflictual form, are the key analytical unit for the remainder of this article. In the following paragraphs we review diverse ways in which power relations have been discussed in relevant literatures pertaining to the role of design in societal transitions. Most relevantly, there is the purpose of “designing new relationships between people and the state” (Manzini & Staszowski, 2013), and the issue of asymmetric power relations between people and institutions (Lewis et al., 2020). Such relationships, and their configuration, may be regarded in multiple ways.

The first is using the lens of public participation (Arnstein, 1969; Barnes et al., 2003; Chilvers & Longhurst, 2016). From this perspective, design approaches have been argued to have democratic potential by fostering practices of collective inquiry (Binder et al., 2015; DiSalvo, 2022). The ‘public’ in this relationship is not a given: practices of public participation do not merely ‘reach

the public', but actually assemble, construct and design new publics (DiSalvo, 2009). As the construction of publics is a politically significant activity, the aim of designing new relationships between people and the state is intrinsically characterized by an engagement with power relations.

Discussion of power relations is also implicit in scholarly discussions of co-production, which is how the field of public management has conceived collaborative relationships between public bodies and citizens (Bovaird, 2007; Bovaird & Loeffler, 2012; Bracci et al., 2016; Voorberg et al., 2015). Co-production can be defined as a process where "citizens can play an active role in producing public goods and services of consequence to them" (Ostrom, 1996, p. 1073), and where public services are produced through long-term partnerships between professionals and users on the basis of mutuality and reciprocity (Bovaird, 2007). Like public participation, co-production is regarded as intrinsically valuable as it can serve democratic purposes (Voorberg et al., 2015). Co-production holds that the qualities of the relationship between public institutions and citizens, which includes aspects of power, are significant. Hence, through co-shaping processes co-production and public participation, designers may contribute to societal transitions by shaping power relations.

There are significant challenges for co-production, however, which may also be understood through the lens of power relations. The lack of empirical evidence that co-production leads to better policy outcomes (Voorberg et al., 2015) might be because the "relational dimension [...] does not easily fit this evaluation context" (Durose et al., 2017, p. 138), which highlights the significance of the relational dimension. Another significant challenge is that co-production undermines established notions of authority and legitimacy (Bovaird, 2007). In other words, co-production challenges existing power relations. This is underscored by Farr, who describes how power relations in co-production requires a continual relational practice to navigate (Farr, 2018). Turnhout et al. (2020) describe another reason why co-production often fails - namely the tendency to 'depoliticize' controversies, often through recourse to rational and scientific reasoning (Turnhout et al., 2020). They conclude that co-production should explicitly engage with power relations.

In design research, similar issues have been addressed in participatory design (Eriksen et al., 2014; Kensing & Greenbaum, 2012) which originally emerged as "an effort to rebalance the power relations between users and technical experts and between workers and managers" (Kensing & Blomberg,

1998, p. 181). Whereas co-production concerns the relation between institutions and the public, participatory design brings more focus to the specific techniques, engagements, and micro-level interactions used in participatory engagements. Like co-production, participatory design has been described as a promising approach to ensure greater democratic involvement in innovation processes (Björgvinsson et al., 2010), and as a way for designers to develop balanced collaborations with communities (Tomasini Giannini & Mulder, 2022). Participatory designers often act as facilitators and mediators, as they create conducive environments for practitioners and citizens to explore opportunities for collaboration (Björgvinsson et al., 2010). As such, participatory designers play a key role in shaping the distribution of power.

The aim of participatory designers has been described as to maximize agency and 'power-with' for the participants, and minimize their own 'power-over' (Tomasini Giannini & Mulder, 2022). Typically, the participatory designer exercises power by designing the setting of the engagement, which enables and constrains the way in which agency and relations of the participants can emerge (Bratteteig & Wagner, 2012). Whilst the designer may have certain intended outcomes, there is a sense that power relations emerge from a contingent and complex interplay (Eriksen et al., 2014) that is not reducible to linear causal mechanisms (Nightingale & Ahlborg, 2018), and that is shaped by structural factors outside of the control of the designer (Mosleh & Larsen, 2021). Hence, settings of participatory design may be usefully characterized as 'in-between spaces' where power relations are emergent (Dantec & DiSalvo, 2013). This underscores that while participatory designers can co-shape power relations, they cannot fully control their manifestation due to the relational dimension.

Finally, besides participatory and co-productive efforts, power relations also factor in multi-actor collaborations that span diverse societal domains (Crosby et al., 2017; Evald et al., 2025; Torfing, 2019), which increasingly aim at the sharing of power (Bryson et al., 2017). Given the heterogeneity of actors and their interests in such settings, the relations between them can be seen as constituted by power (Avelino & Wittmayer, 2016). In multi-actor projects, value is created in the relations and exchanges in-between actors (Best et al., 2019), where relational work is required to navigate paradoxical chicken-and-egg problems (Evald et al., 2025; Waardenburg et al., 2020). Designers are well-positioned to work in this in-between space of conflicting needs and interests (Van Der Bijl-Brouwer, 2016), and have been found to take up roles such as

generator, facilitator, communicator, mediator and provocateur (Geenen et al., 2022). These roles can be regarded as different modes of acting in the in-between space, which imply different ways of exercising, distributing, and challenging power.

Overall, engaging with power relations is a meaningful strategy for designers to contribute to societal transitions. Still, while power relations may be co-shaped by those who are entangled in them, no single actor may fully control how power relations emerge and transform.

8.2.3 Asymmetries of Scale between Institutions and Communities

Besides the general relational qualities of power, we consider one further aspect which is particularly important for large power asymmetries in societal transitions: scale. The scale dimension serves to further understand power relations between institutions on the one hand, and citizens and communities on the other, by characterizing how these different entities act at different scales. To do so, we make use of the Multi-Level Perspective (MLP) (Geels, 2005, 2014). The MLP conceptualizes transitions through the long-term co-evolution and transformation of technological infrastructures, social practices, and political regimes. The MLP distinguishes three levels of scale, namely 1) the macro-level landscape, 2) the meso-level regime, and 3) micro-level niches. For the present purpose, we focus on the meso- and micro-levels, and the power relations that shape dynamics between them.

Starting with the meso-level regime, this is the scale where institutionalized practices, regulations and norms provide societal stability (Geels, 2005). The regime level is where institutions act to shape transition developments at regional or national scales. Design is increasingly adopted at the level of the regime to facilitate processes of policymaking (Blomkamp, 2018, 2022; Lähteenoja et al., 2023; Lewis et al., 2020; Van Buuren et al., 2020). While regime-level activity is characterized by technical knowledge and expertise, the use of design in this context places more emphasis on relationality, interactivity, inclusivity and empathy (Bason, 2017; Van Buuren et al., 2020). In this way, design addresses a particular form of power which is present at the regime level: the tendency towards *governmentality*. Governmentality points towards the risk that governmental institutions tend towards technocratic control and top-down reasoning, which follows from the technical instruments which policy-

makers use to enable and constrain the collective agency of entire populations (Foucault, 2000). As such, governmentality is a challenge for the democratic aspirations of co-production and participatory design. Still, design has been found to counteract tendencies of governmentality.

In contrast, for micro-level actors – which, for the present purpose, we take to include citizens and communities – social-relational qualities are already prioritized over technical reasoning. Transformation at this scale is qualitative and relational, rather than quantitative, and can be understood as ‘scaling deep’ (Lake et al., 2022). Kossoff et al. (2015) argue to prioritize authentic community relationships in transition design, Escobar (2020) and Akama et al. (2019) argue for designing ontologies based on values such as relationality and reciprocity, and De Rosa et al. (2023) study how relational designers can strengthen community narratives. The tension between technical governance focused on measurable impact at scale, and fostering reciprocal relations based on local values, constitutes a particular kind of power relation between institutions and communities. This power relation between institutions and communities – which derives from an asymmetry of scale – is one that should be a central concern for designers who aim to foster co-productive or participatory engagements, and who aim to create constructive collaborations between these two entities. Hence, in addressing the research aim of *exploring the potential of design to contribute to societal transitions by engaging with power*, this review argues that this potential may consist in addressing power relations between actors who reside at different societal scales.

8.3 Approach and Theoretical Framework

Whilst the above review provides a broad overview, the empirical study in this article is conducted with the more specific approach of design anthropology. In doing so, the goal is to answer the research question of *How can design anthropology transform power relations in a participatory and multi-actor project?* This section will provide a brief overview of this approach, and position a framework that integrates this approach with the three dimensions of agency, relationality and scale. Design anthropology combines methods and perspectives from design and anthropology (Gunn et al., 2020; Otto & Smith, 2013; Singh et al., 2021), where design has a future-oriented and interventionist stance, and anthropology aims at understanding the richness and local

specificity of human practices and meanings. We argue that design anthropology has several distinctive characteristics which make it well suited for the study of, and engagement with, power relations.

First of all, to start from the situated positionality of the designer, design anthropology makes use of *ethnography* as a core method to obtain rich and context-specific information. Using ethnography, design anthropology investigates social relations as they organically exist in a particular context – not merely through passive observation, but through active participation in co-shaping these informal relationships, aiming for *reciprocity*. Furthermore, by challenging the distinction between ‘researcher’ and ‘participant’ (Gatt & Ingold, 2013) – an issue which has also been highlighted in the co-production literature (Bovaird & Loeffler, 2012) – design anthropology can explicate how such categories actually enforce power asymmetries. By acting in the space of informality, design anthropology can study how formalized norms, structures and institutions co-shape power, e.g. as a result of governmentality.

Secondly, design anthropology is explicitly *interventionist* (Smith, 2016; Smith & Otto, 2020). Besides practices of informal relation-building, design anthropology harnesses design techniques or tools to make intentional change to a social context. As a result of such intervention, which can be understood as the exercise of agency, designer anthropologists can interpret what novel social phenomena emerge (Singh et al., 2021) and reflect on the moral implications of the intervention (Murphy, 2016). Through its interventionism, design anthropology actively experiments with power. Designer anthropologists do so in a *reflexive* manner as their own positionality is at stake, and becomes transformed. In a different paper, we have positioned the term *transformative action* to characterize the entanglement between this exercise of agency and the transformation of both one’s positionality and its context (Van Leeuwen et al., 2025). In using this approach, design anthropology becomes akin to the experimental action research that intervenes in day-to-day operations of multi-actor projects (Waardenburg et al., 2020).

Integrating these concepts of design anthropology with the earlier discussions on power and design, we position a framework which serves to answer the research question of *How can design anthropology transform power relations in a participatory and multi-actor project?* Since action and understanding are intertwined in our approach, the framework serves the dual

purpose of both transforming and understanding power. It consists of the following three steps:

1. Understanding power relations

Step 1 consists in understanding how the social context is constituted by power relations. It consists in *mapping the diverse actors*, their interests, the *power asymmetries* between them, and how these asymmetries are shaped by differences of *scale*. This step is operationalized through active ethnographic participation by the designer anthropologist, which serves to build reciprocal relations and mutual understanding with diverse actors.

2. Intervention

Step 2 consists in *intervening* in the power relations identified in step 1. It consists in the *intentional exercise of agency*, by mobilizing particular resources, tools or strategies. Design anthropology makes use of various *tools and techniques of design*, in particular those that can instigate change in co-creative and participatory settings. In this step, it is important to explicate the purpose and intention of the intervention: what does the envisioned and intended transformation of power look like?

3. Reflection on transformation

Step 3, which happens after intervention, consists in a *reflection on the consequences and outcomes* of the intervention. In this phase, one may ask questions such as: To what extent were power relations transformed in a desirable direction? What unexpected or contingent dynamics took place? What are potentially harmful side effects of our intervention? In what ways was our own *positionality* transformed in the process?

8.4 Methodology

This section describes the setup of the empirical study, and thereby outlines how the approach and framework described above were mobilized to answer the research question of *How can design anthropology transform power relations in a participatory and multi-actor project?* It does so by firstly describing the project context within which the study was conducted, and

secondly discussing several specific methods which were used as part of the approach.

Project context

The approach described above is mobilized in in the context of a 4 year local energy transition project situated in Amsterdam Southeast, named the Local Inclusive Future Energy (LIFE) project. This project, which took place between 2021 and 2025, aimed to address joint socio-economic and infrastructural challenges in the local energy transition, and was constituted by a multi-disciplinary, multi-actor consortium between the municipality, research institutions, companies, and local actors. Hence, this project featured diverse actors which held distinct interests and were active in different societal domains and scales. As such, the project was thoroughly characterized by power relations between these actors - it is through working in this project that the interest in power came to the forefront. In the beginning, a key envisioned outcome of the project was a 'smart energy platform' that would 'solve' congestion problems in the electricity grid. This platform would further provide various innovative energy services to local energy users, where a key goal was to make these services socially inclusive.

A key context for the project was a local neighbourhood in Amsterdam Southeast. This neighbourhood is characterized by various socio-economic challenges, including energy poverty. As we have described elsewhere in detail, initial efforts to involve local residents in the project were unsuccessful (van Leeuwen & Singh, 2023), leading to the conclusion that the initial project aim - of developing a smart energy platform - was disconnected from their needs (Van Leeuwen & Singh, 2024). The neighbourhood was targeted more because of its status as a 'development neighbourhood' rather than a natural fit with the aims of the project. In the meantime, local residents reported a history of extractive research which had resulted in participation fatigue.

As partners in the LIFE project we worked to realize reciprocal relationships both internal and external to the consortium. Our purpose was twofold. The first was to support cross-disciplinary collaborations between actors in the consortium, including the municipality of Amsterdam, smart technology innovation companies, and local stakeholders including the Johan Crujff ArenA football stadium. The second was to organize and mediate a participatory process with local residents, and thereby to explore how the

project activities could be more socially inclusive. Our active role in this project guided the ways in which we exercise agency: our interventions were aimed towards these two purposes.

Methods

Using an ethnographic approach, the field for our study consisted in all activities that were part of the LIFE project. Our ethnography was enacted in informal conversations, participation in project meetings, analysis of project documents, organization of co-creation workshops and other activities. We combined participation observations recorded in fieldnotes (DeWalt & DeWalt, 2011) with audio recordings of meetings and sessions. The goal was to capture and engage in conversations and interactions as they organically occurred, and infer how these were shaped by power relations. In making notes and recordings we paid particular attention to specific quotes of our collaborators which are illustrative of the phenomenon of power relations. Table 8.1 shows a selection of key activities which contributed to the findings in this article. This selection is non-exhaustive, as in total we have logged 203 data collection activities during our study.

By using an unstructured approach to data gathering and analysis, we are able to capture particular nuances of power relations which may not be recognized using more structured approaches. The relational dimension of power, and the relational quality of our work, is not well suited to technical forms of data gathering and analysis which abstract away from subjectivity. In our approach, subjective experience is informative about our positionality relative to other actors, about the ways in which we should or should not exercise agency, and crucial to reflect on the transformative outcomes of our efforts. Hence, we made use of autoethnographic reflections (Roy & Uekusa, 2020) - i.e., reflections on our own, personal sensibilities and experiences - to interpret the manner in which our own positionality was transformed, and to consider the questions which were part of step 3 of the framework.

Table 8.1: Non-exhaustive selection of key research activities

#	Date	Description
1	17-11-2021	Ethnographic neighborhood visit 1
2	19-11-2021	Ethnographic neighborhood visit 2
3	23-11-2021	Ethnographic neighborhood visit 3
4	14-12-2021	Consortium project session 1
5	21-12-2021	Consortium project session 2
6	07-02-2022	Consortium project session 3
7	08-03-2022	Consortium project session 4
8	16-03-2022	Ethnographic neighborhood visit 4
9	17-03-2022	Ethnographic neighborhood visit 5
10	05-07-2022	Consortium partner day
11	20-09-2022	Ethnographic neighborhood visit 6
12	24-09-2022	Ethnographic neighborhood visit 7
13	25-10-2022	Co-creation workshop with consortium partners 1
14	28-03-2023	Co-creation workshop with consortium partners 2
15	28-04-2023	Co-creation workshop with consortium partners 3
16	16-05-2023	Co-creation workshop with consortium partners 4
17	03-07-2023	Co-creation workshop with Co-Force and residents 1
18	25-09-2023	Co-creation workshop with Co-Force and residents 2
19	13-11-2023	Co-creation workshop with Co-Force and residents 3
20	22-01-2024	Co-creation workshop with Co-Force and residents 4
21	27-05-2024	Outdoor neighborhood event 1
23	23-07-2024	Co-creation workshop with Co-Force and residents 5
24	28-08-2024	Co-creation workshop with Co-Force and residents 6
25	24-09-2024	Co-creation workshop with Co-Force and residents 7
26	28-09-2024	Outdoor neighborhood event Venserpolder 2
27	29-10-2024	Co-creation workshop with Co-Force and residents 8
28	03-12-2024	Co-creation workshop with Co-Force and residents 9
29	07-01-2025	Meeting pioneer group 1
30	04-02-2025	Meeting pioneer group 2
31	06-02-2025	Co-creation workshop with residents and municipality
32	28-02-2025	Meeting pioneer group 3
33	18-03-2025	Meeting pioneer group 4

Our analysis of the data may be understood as a form of abductive reasoning, a common approach in context-sensitive social research (Dubois & Gadde, 2002; Tavory & Timmermans, 2014) as well as design research (Kolko, 2010). Abductive reasoning generates plausible interpretations from surprising or striking empirical findings, and serves to construct conceptual understanding at a higher level of abstraction.

We conducted abductive reasoning by going back-and-forth between data and theory in a collaborative fashion, and cross-checking our interpretations between team members. The framework provided earlier served as our analytical frame. As is common in anthropological and ethnographic research, our findings are reported in a vignette style of writing (Bloom-Christen & Grunow, 2024). Vignettes provide a narrative flow of the course of events, as we observed and interpret them. More than a reporting of specific factors or codes encountered in the data, this narrative flow can represent the informality, everydayness and context-sensitivity which design anthropology is interested in.

8.5 Results

The results section provides three instances where we encountered and intervened in power relations, and provides a short vignette for each of the three steps of the framework – except for the third instance, for reasons which are described there. As such, the vignettes address the following questions: What power relations did we observe? What interventions did we conduct? How do we reflect on their transformative outcome?

8.5.1 Collaboration Within the LIFE Consortium

Because of the problem of participation fatigue mentioned earlier (activities 1-3, 8, 9), the process of engaging residents was challenging in the early phases of the LIFE project. The consortium was furthermore dealing with challenges in internal collaboration (activities 4-7). Consortium partners were roughly split in ‘social’ and ‘technical’ partners, and a common approach between them was lacking. A common experience among project partners was ‘having the same conversation over and over again’, as the technological problem of electricity grid congestion and social issue of including the residents seemed to be irreconcilable. From a social perspective, the envisioned ‘smart energy

platform' could be understood as a depoliticized, technological solution for a broad social issue with economic, cultural, and political dimensions.

Understanding power relations

The power relations of the consortium consisted in the tension between its pre-defined outcome, namely the smart energy platform, and the non-involvement of residents despite the fact that social inclusion was one of the main aims. Whereas the consortium featured a significant mobilization of financial, epistemic, organizational resources to attain the envisioned outcome, few of these resources were mobilized to directly support the residents. The participation of residents was only supported indirectly through the funding of social researchers – including the authors – and Stichting Co-Force, a local NGO.

The envisioned 'smart energy platform' had been mainly 'designed' in the form of technological system architecture diagrams, which served to develop a scalable and replicable technological solution, to solve the problem of grid congestion. This effort may be understood as a meso-scale regime activity, which was disconnected from the needs of local, micro-scale actors – i.e. the residents – to such an extent that the social researchers perceived few constructive avenues to pursue for involving them. In this way, there was a strong power asymmetry between the residents and other stakeholders of the project.

Intervention

About 1 – 1,5 years into the project a key turning point occurred (activity 10). In one of the consortium meetings a key addition was made to the system architecture: the 'Social Platform'. Whilst the exact form and nature of this 'Social Platform' was yet to be determined, its key purpose was to somehow enable residents to meet their needs within the envisioned energy system. By including the Social Platform in the system architecture, the residents – and related social issues – now had a 'place' within the project: the consortium partners could start to envision how the social and technical were interconnected. Even though form and function of the Social Platform were still unclear, the positioning of new a to-be-designed entity already enabled new understandings and interconnections to form. As design researchers we took up the task of further 'designing' this social platform, and intervened by organizing several co-creation workshops with the consortium partners (activities 13-17).

To frame the co-creation process we defined the Social Platform as a 'Local Energy Institution', which would 'govern the generation, distribution, and exchange of value'. By doing so, our explicit intention was to repoliticize the project activities: the design of a new institution opens up questions about its power and legitimacy and its relation to other stakeholders. In the workshop we prompted project partners to envision how the Local Energy Institution would enable or mediate new interactions and exchanges to take place between key stakeholders. A dominant imagination among partners was that it would enable new relationships between stakeholders perceived as 'powerful' – companies or the municipality - and 'powerless' – the local residents. By enabling these widely imagined new collaborations, the Social Platform was imagined to 'solve' many of the challenges the project was dealing with.

Reflection on transformation

The act of 'designing the Social Platform', as a systemic entity that can fit in a techno-economic view on energy transitions, allowed the imagination of solutions to complex social issues. Whilst these solutions were represented in an overly simplistic manner, it made it possible for the technical partners to understand, and engage with these social issues. The Social Platform was imagined as a middle-man and mediator between 'powerful' and 'powerless' actors, showing a strong tendency to 'balance power relations'. By taking up the task of 'designing the Social Platform' as a key component of the system architecture, we mimicked the act of 'making' and 'engineering', whilst actually opening up a discussion about power and issues of a sociopolitical nature. From our perspective, 'designing the Social Platform' was a key turning point in the project, where the focus shifted from techno-economic innovation towards local governance and social organization. This turn enabled a strategic reallocation of resources to further support the involvement of residents. At the same time, this was only a very small step – large power asymmetries were still present.

8.5.2 Co-creating a Local Energy Community with Residents

Understanding power relations

After some further thought, project partners concluded that an appropriate form for the Social Platform would be an energy cooperative, or energy community. Hence, not a technological system, but an organization. Energy cooperatives are well established entities in the Dutch energy transition as

organizations where residents and other stakeholders worked together on joint social and technological issues. A key problem, however, was that this idea emerged in the project consortium whilst residents themselves were not included.

In the next phase of the project we explored with local residents if they would be interested to start a local energy community (activities 13-28). Several tensions emerged in this process. The aim was to be as inclusive as possible and cater to hard-to-reach groups, but we inevitably had to start with local key figures, pioneers and frontrunners, especially those who already had some interest in energy transition. Furthermore, whilst we intended to obtain input from residents to tailor the initiative to their needs, much effort had to first be made to help them understand current developments in the energy transition, and to explain the opportunities that exist if they engage in this initiative. Whilst a key benefit of an energy community is that residents can take ownership over their local energy system, this initial ownership lay with us as 'top-down', systemic actors. This was due to the fact that residents did not yet possess sufficient capacity to realize the project.

Intervention

Given that we could not engage a broad group of residents on the basis of shared interest - many did not have any awareness of, let alone interest in, the possibility to establish an energy community - and because of the historical experience of extractive research, we had to use several strategies to foster reciprocity. First of all we paid residents an hourly compensation for their participation in co-creation workshops. As researchers working in this project professionally, it seemed fair to provide residents the same opportunity to contribute their local expertise about the neighborhood. Another strategy was to make the gatherings more fun and enjoyable. Stationing an ice-cream truck at one outdoor event attracted many people from social groups that we otherwise would not reach (activity 21). Furthermore, we used Lego to playfully represent how a local energy community could be organized, which evoked many positive reactions from participants (activities 23-26).

Whilst the energy community did not exist yet, discussing its potential emergence evoked numerous concerns from residents related to local power relations. Residents voiced their concerns about municipal energy transition agendas, and social housing tenants were perceived as powerless whilst

housing corporations held a crucial position in local decision making. One key tension resided between the intention that a local energy community should benefit all residents, including hard-to-reach groups, and the practical possibilities for 'making something work', which would mean working with a 'coalition of the willing' of well connected - and more powerful - organizations and individuals. One of the main concerns of residents was the energy bill, and one participant said that "people in this area just want to be offered a ready-made solution, to which they can say yes or no" (activity 18). In this, people exhibited a similar 'solutionist' attitude as the technologists within the project consortium.

Reflection on transformation

Reflecting on these activities, and in particular our positionality, we observe a subtle but important distinction between several potential modes of approaching people with these ideas. It would be problematic if we would either 1) present the idea as 'our project' where we are in full control of key decision-making, or 2) not be transparent and explicit about the greater interests shaping our initiative, and the decisions we were making to steer the project direction. For much of the process, there was a distinct ambiguity about the role we should - or should not - be taking up. This also concerned ambiguity around the continuity of the initiative: who would take up our role when the project was over? At the time of writing, a 'pioneer group' of 5-10 people was ready and prepared to take the project further, whilst they do require further assistance (activities 29, 30, 32, 33). To ensure continuity, we had to take up the role of mediating relationships between this pioneer group and external sources of support, including the municipality. Whilst we consider it a transformative outcome that the project has come this far, the work is far from complete.

8.5.3 Mediating an Encounter between Residents and Public Officials

Finally, we describe an encounter that took place between local residents and municipal officials (activity 31). We do not report this encounter under the same structure as above, but aim to illustrate the power relation, intervention, and transformation by quoting from a conversation as it naturally took place. This conversation took place in a workshop which we organized with the explicit intention of bringing residents and municipal officials together to discuss shared

issues and interests in the local energy transition. To mediate the interaction, we first organized a 'serious game' exercise so that participants could become acquainted and work together in a low-stakes and playful manner. We will quote expressions from several participants: one resident (R1) and two municipal officials (M1, M2).

A key discussion emerged as R1 expressed that common initiatives and agendas about 'sustainability', as they are framed by the municipality, do not reach and connect to the concerns of local residents. In particular, she was speaking from her perspective as someone with a Surinamese cultural background.

R1: "It [sustainability] is simply not understandable. The residents in my neighbourhood - there is no one who knows what is going on. What does it mean for me, what can you offer me? I really miss that here, it would be a first step."

R1: "The word sustainability doesn't mean anything to us, we are already very sustainable. The earth is already very important to us. Sustainability and energy transition sounds like a kind of luxury problem, not a problem relevant for me. If you bring it to the culture that people have [...], translate it into that, you have so many projects that you can roll out."

This perspective highlights how power relations interrelate with culturally specific views and policy discourse related to sustainability. One municipal official, who also had a Surinamese background, could elaborate in the following manner:

M1: "In Amsterdam Southeast you have community-based cultures, whereas in Europe and North-America there are individualistic cultures. One is a "culture of being", the other is a "culture of doing",[...] in Southeast, the culture

of being is more represented than the culture of doing. The [policy] approach, it comes from here [points up] [...] because that's where it comes from, people go to hide every time because it looks like a meteorite."

After establishing this difference, a conversation ensued about how these groups might - or might not - be able to find each other, drawing from their present interaction as an example:

R1: "What we are doing here, you could do for more groups. Then people already feel invited"

M2: "You say we can do this with more people. But you are in [the neighbourhood], you could also organise something, and invite people from the municipality to come over. You can say: we have an idea, do you want to help us."

R1: "Yes, it has to go both ways. We can do this in the neighbourhood, then you have the feeling of being there. The people in [my area] have to also be pulled out of their comfort zone. If you do this both ways, there is connection, and you can meet each other."

M2: "I also work in other places in the city, where resident initiatives ask the involvement of the municipality. They say: we are doing something good here, can you support us. In your area, I have the feeling that the municipality is going there a lot, which results in less local initiative."

The above exchange shows that both parties are willing to engage in a reciprocal relationship, but perceive a lack of initiative on both sides. The conversation proceeded about potential solutions and challenges:

M2: *“perhaps we just need to invest in community building for 5 years, independent of policy agendas. So that there is more local connection and organisation. Then we can start implementing policy plans”*

R1: *“The municipality only knows the local parties to whom they give the subsidy. It is always the same key figures who get both rewarded and burdened. The municipality should not rely on local parties, but unburden them by thinking everything through, so that all we have to do is take the residents along”*

The municipal official questioned whether it is within the municipality’s power to do so:

M2: *“I have some doubts [...] whether we can actually do this. It is hard to admit because we should be able to listen, be open and available, without our own agenda and policy goals. To make the residents’ needs central, and serve those, is very challenging for us. My advice to you would be: tell us what to do, and make sure we are doing it right”*

R1: *“Why do we have to this? It shows you cannot place yourselves in our shoes, it is a mindset problem in the municipality.”*

This interaction illustrates structural challenges in the relationship between the municipality and the residents represented by R1. It shows a perceived lack of agency and power, with both parties, to take initiative and cross the in-between space between them. At the same time, it shows how we as designers could relatively simply mediate this conversation.

After the session, the interaction was described by attendees as both 'meaningful' and 'poignant' - it had been the first such interaction that they had seen. We reflect that there is a deficiency in the mutual relationship between the municipality and residents, as they are unable to meet on an equal basis. R1 and M1 exchanged phone numbers and had more meetings later to continue the discussion. We reflect that such interactions, whilst seemingly insignificant, can be meaningful and transformative to the extent that they lead to longer-term partnerships.

8.6 Discussion

In this section we discuss the joint findings of our theoretical review and empirical study. This discussion is divided into five different themes, each of which is composed of two paragraphs. Under each theme, the first paragraph discusses concrete findings from our empirical study, and addresses the research question *How can design anthropology transform power relations in a participatory and multi-actor project?* The second paragraph connects these concrete findings to broader literature, and hence addresses the research aim of *exploring the potential of design to contribute to societal transitions by engaging with power.*

Designers as brokers of power

The interventions describe above were aimed at challenging, restructuring and transforming power relations in different ways. While the interventions took different forms - the positioning of a new institution, the initiation of reciprocal relations, and the mediating of unlikely conversations - this aim was common among them. While such interventions do not make the 'problem of power' go away, our design anthropology approach brought attentiveness to power relations in a way that enabled ongoing engagements with power, which provided a future perspective towards addressing some of the thorny issues in the project.

While various fields of design already engage with power (e.g. in infrastructuring and participatory design (Hillgren et al., 2011; Kensing & Blomberg, 1998)) we argue that designers' role as power brokers in societal transitions should be made even more central and explicit. By positioning themselves in the in-between space of participatory and multi-actor relations,

designers can become active agents in mediation, negotiation, translation, whilst distributing and sharing power between diverse actors. As such, the role of designers becomes more explicitly political: designerly activity which aims to be truly creative, political and experimental will inevitably challenge and politicize established notions of authority and legitimacy. In this way, our approach is similar to civic design, democratic design and agonistic design (Binder et al., 2015; Björgvinsson et al., 2010, 2012; DiSalvo, 2022). In addition to those existing approaches, we argue that the focus on power – as described in this article – contributes a useful conceptual focus to aspects of agency, relationality and scale.

Towards power-work beyond ‘balancing’ power relations

In our study we encountered the common intuition that power relations should be balanced, which may also be found in scholarly debates (e.g. Tomasini Giannini & Mulder (2022)). While in our design anthropology approach we were able to challenge and reshape the balance of power, none of the power relations we engaged with were ‘balanced’. Furthermore, our efforts to empower local residents to establish a local energy community show that even the residents didn’t want to have ‘fully balanced’ power relations. Power also comes with responsibility, and the establishment of an energy community was a responsibility that the residents preferred to outsource to experts.

We suggest that in the context of societal transitions, where institutions, markets and citizens become related, power asymmetries will always be there cannot be eliminated. Rather than aiming to balance power relations, we argue that designers should learn to perform *power-work*. Such power-work would bear resemblance to relational work, which has been found as crucial for multi-actor collaborations (Evald et al., 2025) and which is increasingly becoming the focus of relational design (Akama et al., 2019; De Rosa et al., 2023; Udoewa & Gress, 2023). It consists in understanding the proper distribution of responsibilities, burdens and benefits, in concert with collaborators. If asymmetric power relations are not a problem to be solved, but a reality to be considered, the key question should become: How can asymmetric power relations be leveraged for more constructive outcomes, and what power-work competencies should designers learn?

Design as a dialectic between social issues and solutions

Our findings show that, whilst the view of design as a problem-solving practice is too limited, the envisioning of solutions was important for our collaborators. The desire for solutions to techno-economic problems was shared among engineers, residents and policymakers alike, whereas social researchers and designers brought attention to nuanced social complexities. This latter role is necessary, but must be performed carefully. In our project, the positioning of the social platform and the local energy community as ‘social solutions’ was necessary to build collective confidence for constructive action. At the same time, this effort gave rise to a discussion of matters-of-concern (Brodersen & Pedersen, 2019; Ehn, 2008; Latour, 2004; Poderi et al., 2020) among the partners, which was desired by the social researchers. The result was a dialectical back-and-forth between imagining solutions to narrowly defined problems, and nuancing this understanding by drawing attention to broader social complexities.

The implication of this is that designers should not merely be technical problem-solvers, nor social workers or activists, but something in-between. Besides strategically conceptualizing solutions to move the design process forward, designers should also advocate for a fair distribution of resources, take up explicit and pro-active roles of translation and mediation, and demystify neighborhoods that are labelled by policymakers as ‘too difficult’ (Björgvinsson et al., 2012). It can be emphasized here, that the framing of scalable solutions with a measurable impact is well suited for meso-level regime contexts, whereas social nuances and complexities characterize micro-scale interaction. Hence, engaging in this dialectic serves the purpose of bridging between these scales.

Positionality of the designer and its transformation

Throughout the project, our positionality continually transformed with respect to our collaborators and the issue at hand. In relation to the technologists in our project we became ‘solvers of social issues’, whereas we became ‘solvers of high energy costs’ in relation to local residents. Evidently such perceptions were inaccurate, and while they served temporary strategic purposes for affording our own agency, we had to take care to nuance these roles. It is only because of a reflexive practice that we could understand our positioning as such. Another important finding is that, unlike policymakers, civil servants or other regime-level institutional actors, we were able to politicize the issues in the

project. We were able to do so because we were positioned in the in-between space of relations, not committed to one single cause.

Overall, we suggest that designers can actively experiment with, assert or undermine their own position, depending on the needs of the context. To do so, a reflexive practice is crucial, not only for considerations of positionality (Öz & Timur, 2023; Pihkala & Karasti, 2016; Vink & Koskela-Huotari, 2022) but for power-work more generally (Schiffer, 2020; Tomasini Giannini & Mulder, 2022). Importantly, the designers' role is not fixed, and ultimately, designers should endeavor to make themselves unnecessary so that their context of interest may become self-sufficient and resilient without their intervention. Hence, while designers should aim to become trusted figures that mediate connections, relationships, collaborations that otherwise could not happen, they should transfer ownership over problems and their solutions to appropriate actors at the right time. In other words: designers need to plan their exit strategy well in advance.

What is the entity 'to-be-designed'?

Finally, a key question that comes to mind is: what are designers actually "designing", if not solutions? In our project, we did not deliver a 'final design' as a concrete artefact, but instead advocated for the emergence of a new political entity, in the form of an energy community. For much of the project, particularly in the form of the social platform, this entity functioned as a boundary object in the design process (Broberg et al., 2011; Mark et al., 2007; Tharchen et al., 2020). The nature of our boundary object was fundamentally political: not only did it serve as a mediator in the power relations between project collaborators, but the object itself implied novel future configurations of power. More specifically, the local energy community would provide local residents the capacity to participate in meso-level regime structures.

Building on this finding, we suggest that designers who perform power-work contribute to the emergence, reproduction and transformation of social and political entities, including transitions, institutions and communities. Designers can make use of various tools and techniques to prototype these entities and make them tangible, to communicate their character to the relevant stakeholders, and open them up for politicization and contestation. Still, the notion that transitions can be 'designed' in their totality is inadequate, not only because these exceed designers' cognitive limits (Dorst, 2019b) but because

transitions are diffuse processes that are co-shaped by a large number of actors. Besides designing political boundary objects, designers may also design environments to facilitate the building of collaborations, or to design interventions with the purpose of evoking perceptions and imaginations of power, and to bring out contestation rather than consensus (Björgvinsson et al., 2012).

8.7 Concluding remarks

The research aim which guided this article was to *explore the potential of design to contribute to societal transitions by engaging with power*. Through a broad review of relevant theory, it was argued that this potential consists in engaging with power relations between actors who act at different scales. Using the specific approach of design anthropology, a theoretical framework was defined to empirically answer the research question of *How can design anthropology transform power relations in a participatory and multi-actor project?* Based on the empirical study, the broader implications of our study were discussed under five dimensions.

As a closing message, we suggest that a key role of designers in societal transitions is to contribute to the development of relational and social infrastructure. To address societal transitions locally and in an integrated manner, strong relations and networks between citizens, communities, institutions, companies, and other actors is a fundamental precondition (Kossoff, 2015). Rather than devising novel and creative solutions, design can “link existing solutions so that they become steps in a larger transition vision” (Irwin et al., 2015, p. 4). Because societal transitions develop over the course of decades, it is better to aim for the resilience and self-organization of long-term partnerships (Bovaird, 2007), rather than short-term solutions which will often have unpredictable side-effects. Relations cannot be ‘solved’ - conflict, contestation and power are inherent to relational work - meaning that power-work should be central to designerly practice.

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9

CONCEPTUALIZING POWER RELATIONS IN LOCAL ENERGY TRANSITIONS

A Design Anthropology Approach in Amsterdam
Southeast

This article conceptualizes power relations in local energy transitions, by combining theories on power with insights from economic anthropology. Power relations are defined as the interdependencies in capacity for action between two or more actors. This definition is combined with the concept of reciprocity, which denotes how communal and societal relations are shaped and constituted by the modality of the mutual exchange of gifts, goods and services. Besides a theoretical review, the article provides an empirical account of four years of field research conducted in a local energy transition project in Amsterdam Southeast. The study mobilizes a design anthropology approach and reports the findings in five vignettes which describe the power relations and reciprocities that were encountered. Each vignette focuses on the relationship between local households and another energy actor, as it was encountered and shaped in the project. Based on these findings, and the understandings of power relations and reciprocities, a framework is constructed that conceptualizes power relations in local energy transitions.

9.1 Introduction

Recent scholarship argues that the relational aspects of energy use should be a focus for future work (Hargreaves & Middlemiss, 2020; Middlemiss et al., 2024). Social relations shape practices, routines and behaviors (Shove et al., 2015), and are central to how people experience and perceive themselves and their identity, making it an important factor for policy agendas on sustainability, energy demand. An important aspect of relations is power (Ahlborg, 2017), as the relative capacity of actors to exercise agency, achieve goals and realize their interests. Power has been the subject of energy scholarship and adjacent fields in a number of ways: power is inherent to participatory engagements (Arnstein, 1969; Turnhout et al., 2020), co-shapes with energy innovations and technologies (Al-Hanahi et al., 2025; Pohlmann, 2019), entangled with household energy poverty (Vahnberg & Von Platten, 2025), related to the democratization and decentralization of energy transitions (Brisbois, 2019; Burke & Stephens, 2018), central to action research and social innovation (de Geus et al., 2023), and characteristic to how transition actors collaborate (Avelino & Wittmayer, 2016; Katre & Tozzi, 2019). Insights on power relations are furthermore informative for other studies which focus on relations, including the role of informal relations in energy communities (Goedkoop et al., 2025), the formation of relational trust in participatory engagements (Otto et al., 2023), and the restructuring of social relations through social innovation (Wittmayer et al., 2022).

This article builds on these lines of inquiry in energy research by taking power relations as the key phenomenon of interest. It takes a relational perspective (Nightingale & Ahlborg, 2018) to define power relations as the interdependencies between actors' capacity for action. As such, power relations are central to how people and other energy actors negotiate interests and engage in shared decision-making. For more specificity, the article further draws from the key distinction of power-to, power-over and power-with (Avelino et al., 2023).

These concepts are combined with insights from the field of economic anthropology, specifically theory on reciprocity. In economic anthropology, social relations are seen as mutually produced with economic exchanges and the particular dynamics which characterize these exchanges. In particular, this article draws from Marshall Sahlins' theorization of generalized, balanced, and negative reciprocity (Sahlins, 2011). Economic anthropology aligns with the

perspective of economic sociology which has been recently advanced (Hargreaves & Middlemiss, 2020; Middlemiss et al., 2024), in the sense that the distribution, production and consumption of goods and resources must be grounded in peoples' social and cultural lives, meanings and experiences. With the use of economic anthropology, the article builds upon previous work which has explored how economic anthropology can inform alternative perspectives of energy exchange, beyond trading and rational transactions (Singh et al., 2017, 2018). Overall, conceptualizing power relations through reciprocity can inform efforts to reframe overly individualistic and materialistic understandings in energy transitions, which are based on the notion that people are rational individuals that exercise agency by harnessing new technologies and innovations (Damgaard et al., 2022; Kluskens et al., 2025; Lennon et al., 2020; Wahlund & Palm, 2022).

These theoretical understandings are mobilized in a four-year empirical study which uses a design anthropology approach in a local energy transition project in Amsterdam Southeast. In this study, the authors were involved as active participants in co-shaping innovations to address combined social and technical challenges in the energy transition. As part of this involvement, existing, emerging and envisioned social relations were investigated between diverse actors. Particular focus was on a neighborhood of diverse social, cultural and economic composition, and on the power relations that local residents were becoming entangled in as a result of this project. The empirical findings describe power relations between the residents and five other key actors: researchers, large asset owners, other neighbourhood actors, the municipality and the distribution system operator. Based on these findings, the article positions a framework that contributes new concepts of power relations. This framework distinguishes between asymmetric and symmetric power relations, and characterizes how different forms of reciprocity shape power relations.

9.2 Theoretical background

9.2.1 Power Relations

The starting point for the conceptualization of power relations is the work of Ahlborg and Nightingale, who distinguish various aspects of power in the context of political ecology and energy transitions (Ahlborg, 2017; Nightingale & Ahlborg,

2018). On the one hand they distinguish agentic power as ‘the capacity to act’, which aligns with another key definition of power as ‘the capacity of actors to mobilize resources to achieve goals’ (Avelino & Rotmans, 2009). Both also argue for a conception of power beyond individual agency, however. Ahlborg and Nightingale use the term constitutive power, which holds on the one hand that power is relational – it exist in the interactions between actors – and that power is productive, in the sense that it co-produces identities, hierarchies and subjectivities. Power is furthermore considered as dynamic, and as co-shaping with non-human actors, including technologies and nature. Ultimately, they consider power as a relational capacity to act. This article adopts the relational view of power, and identifies *power relations* as the phenomenon of interest. Power relations are here defined as the *interdependencies in capacity for action* between actors. As such, power is considered an aspect of social relations which pertains to the individual and shared capacity to act and achieve goals.

To bring further richness to power relations, various other power concepts are informative. In particular, based on extensive previous research, Avelino et al. position a heuristic framework with the tripartite distinction of power-to, power-over and power-with (Avelino et al., 2023). Power-to here aligns with the definition given earlier, as the capacity to act and achieve goals. Power-over refers to relations of domination, where one actor can make others do something they otherwise would not do. This aligns with classical conceptions of power as coercion, such as Max Weber’s (Weber, 1978). Finally, power-with refers to a capacity of multiple actors to work together towards shared goals. The conception of power-with has roots in Hannah Arendt’s work who wrote that ‘power corresponds to the human ability not just to act but to act in concert’ (Arendt, 1970, p. 44). Avelino et al. (2023) find that power-to, power-over and power-with all play an important role in social innovation projects in energy transitions, and thereby complexify what they call the common “David vs. Goliath narrative” in transitions studies, which focuses on power-over relations between niche and regime actors. For the present purpose, the concepts of power-over and power-with fruitfully inform the investigation into different types of power relations in the empirical study. Based on the results of this empirical work, the concepts of power-to, power-with and power-over will be combined with concepts of reciprocity, to create the framework in Section 9.4.

There are various other relevant studies which have engaged with power relations in energy transition contexts. In their study of power in community energy systems in India, Katre & Tozzi distinguish 'hugs, carrots and sticks' as different strategies used by institutional actors to engage communities (Katre & Tozzi, 2019). Whilst 'sticks' can be considered power-over and 'hugs' can be considered power-with, there is more subtlety to this comparison. In particular, whilst 'hugs' are forms of support from institutional actors towards communities, the formation of mutual trust can also serve as instrumental for achieving other institutional goals, hence also being forms of power-to. Similarly, it is not obvious how 'carrots' - as explicit, transactional reward-mechanisms that incentivize particular community actions - map onto the distinction of power-with, power-to, power-over. Further complexities are highlighted by the notions of empowerment and disempowerment (Avelino et al., 2019). Empowerment may be taken to refer to the process where 'more powerful' actors support 'less powerful' actors to increase their capacity to act. At the same time, this can create a dependency relationship that - paradoxically - results in disempowerment, whether intentional or not. Besides power-over, power-with, power-to, empowerment and disempowerment can be considered as further aspects of power relations.

Finally, for the context of energy transitions where manifold novel technological and economic innovations are emerging, the role of such innovations in shaping power should be considered. As Nightingale and Ahlborg say, non-human actors co-shape with power (Nightingale & Ahlborg, 2018). For the context of emerging energy systems, of particular interest is the role of flexibility capital (Powells & Fell, 2019), and new smart energy platforms which are shaping the relations and interactions of energy users (Boekelo & Kloppenburg, 2023; Kloppenburg & Boekelo, 2019). Discourse around smart energy innovation has a tendency to be antithetical to political contestation and deliberation (Sadowski & Levenda, 2020), and participatory or co-productive engagements can be depoliticized because of recourse to scientific and technical reasoning (Turnhout et al., 2020). All of this should be considered in a societal context of complex relations between heterogeneous actors, in particular as it concerns participatory engagements between citizens and institutions, which can be considered as relations in and of themselves (Chilvers & Longhurst, 2016). The interfaces between diverse transition actors, such as the state, commercial actors and community actors can also be understood as

power relations (Avelino & Wittmayer, 2016). In this way, the conception of power relations developed in this article goes beyond human-to-human relations, to cover actor relations in transition contexts.

9.2.2 Reciprocity and Economic Anthropology

This section reviews Sahlins theory of reciprocities, as well as various other relevant perspectives and concepts from economic anthropology. Sahlins' key work, *Stone Age Economics*, describes his studies on economic life in primitive societies, which he distinguishes from affluent and industrialized societies (Sahlins, 2011). The book advances a substantivist view on economics, which holds that economies cannot be detached from cultural norms, meanings and practices, but rather, are embedded within it. This view is distinguished with the formalist view, which is essentially the neoclassical view which considers economics as based upon the rational choice of individual actors aiming to maximize their self-interest (Elardo & Campbell, 2006). The substantivist view of economics originates with Karl Polanyi, who argued that the economy is embedded in social and political institutions, and that hence, it is not feasible for markets to self-regulate (Polanyi, 1985). Sahlins' view on reciprocity, which is elaborated next, should be seen in this historical context. The term reciprocity is here defined as the modality of mutual interaction and exchange of gifts, goods and services between two parties. Unlike regular use of the term, however, reciprocity is here not considered as a uniform or unequivocally positive characteristic. Sahlins distinguishes three types of reciprocity: generalized, balanced, and negative reciprocity. These different kinds of reciprocity characterize how economic exchanges are co-produced with social relations of a varying social distance. Hence, generalized, balanced and negative reciprocity characterize relations with a progressively greater social distance, which feature progressively lower trust, intimacy and mutual understanding.

Starting with *generalized reciprocity*, this refers to relations that are closely trusted, such as with family members and tight-knit communities. Such relationships are not characterized by trading, or by rational maximization of self-interest, but by *sharing*. They typically feature a high degree of altruism and care, and people are inclined to contribute to a greater good without expecting something in return. This is what characterizes generalized reciprocity: an act of giving where there is no expectation of an equal and immediate return. Instead, there is trust that the gift will be reciprocated at some point in the future. There

is no discrete calculation of the value of each side of the exchange, as the social-relational aspect of the exchange takes priority over the materialistic value. If the receiver of the gift does not reciprocate the gift, this does not mean that the giver will cease to give. In terms of another economic anthropologist, Stephen Gudeman, generalized reciprocity can be understood to characterize the community domain of economics, which forms a base of close-knit relationships with shared material resources and foundations (Gudeman, 2007).

The second form is *balanced reciprocity*, which is a symmetrical and equal exchange which characterizes the typical commercial transaction, where a particular good or service is exchanged for its perceived monetary value – or, an equal and immediate exchange of gifts. Such an exchange may be settled immediately, or may be mediated by contractual obligations and agreements which span a larger period of time. There is little significance to the social relationship which exceeds the transaction, and after the transaction is completed, both parties separate without expectation of further interaction. Balanced reciprocity characterizes relationships with a greater social distance, where there is sufficient trust to engage in trade, but insufficient to engage in gifting. If an exchange – characterized by balanced reciprocity – is not reciprocated with an appropriate return, then the social relationship immediately breaks down. Balanced reciprocity can be considered to characterize the market domain of economics, which feature impersonal transactions and contractual obligations, and operate through formalized rules rather than informal norms and meanings (Gudeman, 2007).

The third and final form is *negative reciprocity*, which is essentially an effort to take more than one gives. Negative reciprocity includes forms of theft, exploitation and extraction, and is characterized by a very large social distance, with little to no trust. Negative reciprocity is akin to the maximization of individualistic self-interest with little regard for the interest of the other, and may be characterized by non-consensual or coercive social dynamics. At the same time, bartering and haggling may also be characterized by negative reciprocity. With this type of reciprocity, social relations are either distant, hostile or simply non-existent. In Gudeman's terms, negative reciprocity characterizes the domain of financial markets, where social relations and material foundations are completely abstracted away, and maximization of profit is the only motivating principle (Gudeman, 2007).

Besides these three forms of reciprocity, several other key concepts are informative for the present purpose. The first is the *mediator* of transactions. The mediator is essentially a 'third party' who plays an important role in shaping how the reciprocal exchange takes place. Based on his research in primitive societies, Sahlins distinguishes two types of mediators (Sahlins, 2011). The first is the chief, or the 'big man', which is a political leader of the community. The chief collects the surplus of goods that the community produces and then redistributes these goods among the community. This mediation is a particular kind of reciprocity between the chief and the community, where the chief maintains social status and legitimacy through his act of reciprocation. The second type of mediator derives from Sahlins' study of the Maori, where he describes the Hau as a kind of spiritual mediator. Through spiritual beliefs, the Hau acts as an enforcer of reciprocity as it affords people a normative understanding of how exchanges *should* take place for the common good. Besides Sahlins' mediator, Gudeman's dialectical tension between market and community is a generative concept for the present purpose (Gudeman, 2007). As mentioned, Gudeman distinguishes different economic domains which are characterized by varying degrees of abstraction. These domains are not wholly separate however, but depend on one another. On the one hand, markets depend on the foundation of trust and mutual understanding, whereas communities rely on the market for obtaining goods and services which they cannot produce themselves.

9.3 Empirical Study

9.3.1 Design Anthropology approach

To empirically study the relational phenomena described above, this article mobilizes a design anthropology approach (Murphy, 2016; Singh, 2019; Smith, 2016; Smith & Otto, 2020). This approach is based upon two methodological cornerstones of ethnographic fieldwork and active intervention. Using an ethnographic methodology, this approach is fundamentally situated in the positionality and perspective of the researcher, who makes rich and detailed observations of social phenomena in their natural context. This does not mean that the researcher is a passive observer, as designer anthropologists aim to actively intervene in the social context of interest. On the one hand, such intervention is enacted in day-to-day social interactions and activities, where

there is an aim of removing the distinction between ‘researcher’ and ‘participant’ (Gatt & Ingold, 2013). Hence, this design anthropology approach engages with social relations as they naturally occur and unfold. On the other hand, interventions are also conducted using more explicit and deliberate design methods and techniques, which can elicit particular social phenomena of interest. In this way, design anthropology is both oriented towards the past and present, as well as to the future: it aims to study social phenomena in their emergence (Singh et al., 2021).

Under this overarching approach, several key methods are used to gather and analyze data. As part of the ethnographic fieldwork the authors conduct participant observations (DeWalt & DeWalt, 2011) as well as collaborative autoethnographic reflections (Roy & Uekusa, 2020) to reflect on their positionality. Co-creation workshops were part of the interventionist approach using various design techniques and methods. Given the phenomenon of interest, namely power relations, a key aspect to consider is that all data that were collected were the function of the relations that the authors were a part of. Hence, this data is fundamentally situated within these relations and subject to their dynamics. This is one reason, along with the heterogeneity of the data – which includes written notes, audio recordings, reports and documents, and visual material – and the situatedness in a single project context, that a systematic inductive data analysis was found to be not appropriate. Instead, the authors employed an abductive reasoning approach, which is well-suited for context-sensitive social research where it is impossible to achieve a sufficient degree of repeatability and consistency for the application of inductive reasoning (Tavory & Timmermans, 2014). Rather than producing confirmed theory, abductive reasoning generates plausible hypotheses from surprising or anomalous empirical findings. The abductive reasoning approach requires epistemic humility, but also affords the capacity to be more creative with the interpretation of the data. The data are reported in the form of ethnographic vignettes, which form the synthesis of the observations, reflections and interpretations conducted. As such, the vignettes seek to convey social meaning rather than objective facts (Bloom-Christen & Grunow, 2024).

Roles between the authors were distributed as follows. The first author took up the primary role in conducting the fieldwork, collecting data, and engaging with stakeholders. The first and second authors jointly conducted data

analysis, interpretation, and reflection. The third and fourth authors took up roles of supervision, project management, reviewing and giving feedback.

9.3.2 Project context

The design anthropology approach described above is mobilized in a 4 year local energy transition project situated in Amsterdam Southeast, named the Local Inclusive Future Energy (LIFE) project. This project, which took place between 2021 and 2025, aimed to address joint socio-economic and infrastructural challenges in the local energy transition, and was constituted by a broad multi-disciplinary, multi-actor consortium. Key partners in the consortium included the municipality of Amsterdam, smart technology innovation companies, multiple research institutions, local businesses - including the Johan Crujff ArenA football stadium as the project lead partner - and a local NGO, Stichting Co-Force. In the beginning, a key envisioned outcome of the project was a 'smart energy platform' that would address congestion problems in the local electricity grid. This platform would further provide various innovative energy services to local energy users, where a key goal was to make these services socially inclusive.

A key context for the project was a local neighbourhood in Amsterdam Southeast. This neighbourhood is characterized by various socio-economic challenges, including energy poverty, social isolation and high crime rates. As is described elsewhere in greater detail, initial efforts to involve local residents in the project were unsuccessful (van Leeuwen & Singh, 2023), leading to the conclusion that the initial project framing was disconnected from local user needs (Van Leeuwen & Singh, 2024). As partners in the LIFE project the authors contributed towards the aims of the project, and simultaneously investigated the project context as researchers. In particular, a key role of the authors was to facilitate a participatory process with local residents. As such, the context of the project - including internal consortium activities, collaborations with external partners, and the participation of residents - formed the domain where data was gathered. In this way, social relations were not merely an object of study, but an active concern of the authors, as fostering constructive and trusted relationships are key to project organization as well as novel developments in local energy transitions. It is through these efforts that aspects of reciprocity and power came to the forefront, and could be inferred, interpreted and studied.

9.3.3 Results

As described above, the results are written to provide insight into power relations as they were existing, emergent, and envisioned. The vignettes are written with a narrative flow to describe how relations were encountered, what interventions were conducted in the project, and how the future evolution of these relations was envisioned. In the descriptions, the concepts of power and reciprocity that are introduced above are used. As it is not feasible to here give a complete account of all relations that composed the project, this section focuses on the relations that local residents were involved in, as this group is considered most interesting and relevant for the present research purposes. As such, this section reports on relations between the residents and the other energy system actors in the project. The section provides five vignettes, each of which reports on one of these relations, in the following order: researchers, large asset owners, other neighbourhood actors, the municipality and the distribution system operator. Rather than focusing on granular ethnographic details, the findings are reported at a slightly higher level of abstraction, as this is where the concepts of relations, power and reciprocity become meaningful, and because it allows for a higher-order understanding to emerge. In this way, the vignettes are written in the form of narratives which synthesize the variety of data which were obtained from observations, co-creation sessions, observations and reflections. Since the authors were active agents in this context, results are written in the 'we' form wherever appropriate to explicate our positionality and perspective.

Residents – Researchers

As mentioned, our explicit role in the LIFE project was to investigate how the project's envisioned smart energy solutions could create value for local residents – in particular vulnerable and energy-poor residents – and to facilitate a participatory process so that these solutions could be co-created with the residents. To do so, we initially undertook a number of ethnographic field visits to the neighbourhood, looking to establish relations with the residents. As is described elsewhere in greater detail (van Leeuwen & Singh, 2023), these initial efforts were unsuccessful: many residents had previous experience with participatory projects, and found that they provide insufficient value for the neighbourhood. In other words, they experienced *participation fatigue* and *extractive research*. Whilst our intention was to form a constructive relationship

with the residents, they have experienced the relationship with researchers, universities and the municipality as being characterized by *negative reciprocity*: they felt that in return for their investment of time and energy, and for providing researchers with data, the outcomes of participatory projects had provided insufficient value for them and the neighbourhood. Moreover, they felt that researchers and students continued to enter the neighborhood to research the same topics: it was outside of their power to stop this, and hence, this may be characterized as a relationship of *power-over*.

After these experiences, we had to carefully reflect how a mutual relationship could provide more benefit to the residents. To start, the aim of developing a smart energy platform was changed into the aim of establishing a *local energy community*. Whilst the smart energy platform was highly disconnected from resident needs, a local energy community could provide greater value. Whilst this required extra effort on behalf of the project, we considered this as a necessary act of *giving*, or moving towards *generalized reciprocity*. At the same time, given that there is significant uncertainty around whether this value could be realized, more was required to compensate residents for their investment of time, energy and effort into this project. After all, if we want to displace the expert-participant distinction – as design anthropology aims to do – the residents should also be financially compensated (see also Turnhout et al. (2020)). Unfortunately, this could not be organized through the university beyond compensations such as gift vouchers: the expert-participant distinction is strongly institutionalized and could not be challenged. Thankfully our local partner, the NGO Stichting Co-Force, was able to provide this financial support, and provided the residents an hourly compensation for their participation in co-creation workshops and meetings. Hence, thanks to Stichting Co-Force who could act as a mediator and establish a relationship of *balanced reciprocity* – participation in exchange for financial compensation – our relationship with the residents changed more into *power-with*.

There is an important challenge as it concerns the future potential of this relationship. Insofar constructive relations between researchers and residents were established, these relations formally ended with the final deadline of the LIFE project, as funding for both the researchers' and the residents' work expired. Still, the common project of establishing a local energy community – which will be described further later on – was still in the early phases. Hence, this shows that the open-endedness of a relationship based on generalized

reciprocity is institutionally constrained. Since the residents perceive their relationship with institutions as characterized by negative reciprocity, our sense was that this should be 'repaired' by fostering generalized reciprocity. However, institutional logics favor balanced reciprocity and inhibit generalized reciprocity based on contractual obligations and discrete costs and benefits. We suggest that, insofar researchers' activities are institutionally determined, this observation poses a serious challenge towards the possibility of forming researcher-resident relations based on power-with and generalized reciprocity.

Residents - Large Asset Owners

Besides the residents, the second key stakeholder group of the LIFE project was Large Asset Owners (LAOs) in the local area. These are larger commercial actors which have access to large energy assets which are of interest to the project, in particular flexibility assets, such as battery storage or heat-cold storage. These stakeholders were particularly interesting due to the possibility of using the flex assets for addressing the issue of grid congestion. The envisioned smart energy solutions, in particular the smart platform, would enable the smart interoperation of these assets to create value for the grid and the LAOs. Unlike the residents, the LAO interests were accounted for to a greater detail from the beginning. In particular, one key LAO was the Johan Crujff Arena (JCA), the local football stadium which manages a large battery. The JCA was the lead partner of the project and was closely involved in shaping the project from its inception, and hence had significant power in shaping the course of the project. As the lead partner, the JCA had said that besides the LAOs, they considered the interests of the residents a key priority.

Significant discussion arose in the project about how the residents and LAOs could collaborate on energy. At this point, there was a perception of *negative reciprocity* among the residents, as visitors to the JCA would park their cars in the neighbourhood and create disturbances for the residents. It was commonly agreed that there was a large power asymmetry between the LAOs and the residents: the LAOs were well organized, had access to resources and network, were already represented in the project consortium, and had flexibility capital - the residents had none of these things. Conversation unfolded around how the LAOs could support a process of *empowerment* of the residents, and thereby equalize the power relations. There was a process of exploring how this

relationship could unfold, where we acted as *mediators* between the LAOs and the residents.

We and other researchers suggested that LAOs should initiate a relationship based on *generalized reciprocity*: giving without expecting a return. This would help the residents to get organized without imposing an expected outcome, and would be appropriate given the negative reciprocity that already exists. There were various forms in which this could take place: the LAOs could share some of the financial revenue of the smart energy platform with the residents, or more interestingly, they could share access to their energy storage assets, e.g. to make it possible for residents to conduct intraday storage from their residential PV panels. Still, it should be no surprise that the LAOs – being commercial actors – sought *balanced reciprocity* by defining a guaranteed return on their investment. Since it was not possible or appropriate to provide guarantees about the value that the residents could provide in the future, other avenues were explored, in particular the possibility for LAOs to provide support as part of their requirements to report on their ESG (Environmental, Social, Governance) goals.

We proposed several times to the LAOs to have a meeting with the residents, so as to reduce the *social distance*. Unfortunately, the LAOs were not prepared to do so: they would only meet the residents as if to enter a negotiation, where they would come with a prepared proposal about how value could be mutually created and exchanged in a *balanced reciprocal* way. Furthermore, the LAOs said that they would only meet with residents who could represent a larger collective: they did not desire to meet only individuals. Whilst we had contacts with key community leaders and had a group regularly attending co-creation sessions, they could not represent the entire neighbourhood. Since the idea of establishing a local energy community had emerged, we furthermore proposed the idea that some of the LAOs could take part in this energy community. A shared governance structure would make it much easier to conduct shared decision-making, initiate joint projects and distribute costs and benefits: it would be a true form of *power-with*. This was resolutely refused by the LAOs, presumably because they felt it would be too big of a commitment, and because they would have to give up too much of their own power in this relationship.

Here is an important problem: the residents could get better organized with support from the LAOs, but the LAOs would only engage with the residents

if they were better organized. This is a chicken-and-egg problem where a large power asymmetry inhibits any relationship to form, a deadlock where *power-with* is impossible, which can only be resolved if the more powerful party exercises their *power-to* to initiate a practice of *generalized reciprocity*: of giving without expecting something in return.

Residents – Other Neighbourhood Actors

The residents, as individual people or households, are not the only relevant local actors in the neighbourhood where the LIFE project was active. First of all, the neighbourhood features various active community centres – including a women’s urban gardening initiative and a youth centre – where community leaders and members do service work for the community, often in the form of *generalized reciprocity*. The role of community leaders is important here, as they were some of the first people we spoke to, and who informed us about the issues of participation fatigue and extractive research. These community leaders hold power in the neighbourhood – more than most people – and exercise it as a form of *power-with* to safeguard the interests of the community. In relation to external actors, the community leaders act as gatekeepers and mediators who can provide access, where they prefer a form of *balanced reciprocity* if the social distance is too large for generalized reciprocity. The community leaders understand that this ‘access to the community’ gives them power in relation to the external world. This is particularly true as it concerns the most vulnerable groups, which can only be reached through the most highly trusted relations and pathways.

Besides the community centres and leaders, the local homeowners’ associations (Verenigingen van Eigenaren, VvE) play a very important role. The neighbourhood is divided into a number of large apartment blocks with several hundred households each, and each of these blocks is managed by a single VvE which organizes maintenance and sustainable renovations. The VvE’s are managed by a board of volunteers – active residents who willingly take up administrative tasks of considerable financial and technical complexity. Given the voluntariness, this work can be seen as a form of *generalized reciprocity* towards the other residents in the same building. Through its dependence on volunteer work, many of the VvE’s were not very active or functioning at an appropriate level. Whenever the VvE must make a financial decision, the members – all residents in the building – can vote to agree or disagree at the

general assembly. Hence, as a shared governance structure, the VvE functions as a form of organized *power-with*. Unfortunately, it is very common for residents to not show up for the members' assembly, resulting in indecision, as there is a minimum threshold of votes required for a decision to be made. Hence, many VvE's suffer from a lack of *power-to*, despite the board members' hard work.

Here, the role of another actor becomes important: the social housing associations. In this neighbourhood, homeownership in all of the apartment blocks is split between the private homeowners and the social housing corporation. The social housing corporation often owns more than 50% of the properties, ensuring that they always have a majority vote to make decisions in the VvE. This ensures that the VvE has sufficient *power-to*, but also that the housing corporation has *power-over* the process. As a result, the social housing tenants consider themselves *disempowered*: they have no ability to influence the decision-making in the VvE.

All of this is relevant for the local energy transition, and the LIFE project, because the VvEs are a key actor for decision-making when it comes to investing in, or placing, shared solar PV roofs, sustainable apartment renovations, battery storage or EV charging stations. The active group of residents which was assembled during the project was primarily composed of active VvE board members, who already had some knowledge and interest into the subject matter of energy transition. Thus, despite the project ambition to appeal to the most vulnerable groups - including social housing tenants - the increased *social distance*, perceived lack of relevance of energy transition, and sense of *disempowerment* of this group made it so that we had to start with the pioneers and decision-makers within the VvE's. Whilst these people conduct important service for the neighbourhood, and hence again act as *mediators* towards other residents, the VvE's are also very much invisible for many residents.

Finally, as mentioned earlier, the project gave rise to the initiative to establish a local energy community in the neighbourhood, to provide the neighbourhood greater *power-with* in the local energy transition. In numerous co-creation workshops with residents, the manner in which this initiative should relate to the neighbourhood and external actors was discussed in detail. As a starting point we took a common organizational form in the Netherlands, the 'energy cooperative', and explored the potential to install rooftop PV installations under collective ownership. The first question concerns finances:

how could the energy cooperative act as a *mediator* who distributes costs and benefits? The cooperative could be a recipient of government subsidies for the solar rooftops, and distribute the benefits among the residents, ensuring that – in particular – energy-vulnerable households could benefit. A key challenge was how the cooperative could have sufficient *power-to* to organize a project of large complexity. Whilst active VvE board members were interested and supportive of the idea, many indicated that their activities as board members were already taking up much of their time. Whilst there were other residents who were interested in taking part, they indicated that the financial and technical complexity exceeded their knowledge, and hence, they would be unable to take a leadership role.

Finally, while there were various subsidies available to support energy communities, policies prescribed that these subsidies could not be used for the financial compensation of board members' work. Instead, the subsidies could be used to hire external experts to do the work. It is important to emphasize the significance of this: the institutional structuring of financial support for energy communities encourages the outsourcing of *power-to* to experts, rather than keeping it within the community – hence, one might say that the subsidies discourage the building of *power-with* within the community. Furthermore, it means that board members of energy communities must do their work based on *generalized reciprocity*, meaning that this role is reserved for people with excess motivation, time, and energy to invest, and who have some knowledge of how to navigate the financial, technical and institutional complexity. There were other challenges for the energy community. The *power-over* of the housing corporations proved an important barrier, as it was in the policy of these organizations to focus on other, more neglected apartment buildings elsewhere in the city, and hence they would not support VvE's investment in solar PV roofs. Finally there were internal conflicts within the community – one occurrence was that a local 'neighbourhood platform', which was intended to represent the residents' interests towards the municipality, was split up due to internal conflict. We learned that, due to various historical difficulties in local collaboration, there was a lack of trust among some of the local community members. Also, concerns were raised that there might be some people in the neighbourhood looking to take advantage – i.e., *negative reciprocity* – of any energy-related initiative that would emerge.

Residents – Municipality

Between the residents and the municipality of Amsterdam, both parties held a different view of their mutual role and relationship. The municipality was an important partner in the LIFE project, as the project's primary goals – mitigating grid congestion and supporting social inclusion – were their primary interests. At the same time, the municipality took background role in the project's day-to-day activities, and was mainly represented through an externally hired project manager who safeguarded project timelines, deliverables and administration. The municipality here regards itself as a *mediator* of the local energy transition. It sets the policy goals for CO₂ reduction – over the course of this research, Amsterdam's goal for achieving net-zero emissions was pushed back from 2040 to 2050 – and also makes policies for other causes such as energy poverty, social wellbeing, and ensuring that businesses have access to sufficient grid capacity. Whilst the municipality exercises a form of *power-over* by setting the boundary conditions, they are cautious to not intervene too actively in society.

The residents have various perceptions. On the one hand, some residents perceived the municipality as an active agent in some ways. An example is that some had experienced the municipality intervening to realize a collective heating system in their apartment building, which had resulted in higher energy costs than expected. Also, the reported issue of participation fatigue was partly the result of the municipality initiating projects and programmes, which did not result in sufficient follow-through. The neighbourhood in question was identified by the municipality as a 'development neighbourhood', meaning that the local socioeconomic conditions require extra attention from researchers and policymakers. In this indirect way, the influence of the municipality was still experienced as *negative reciprocity*, insofar this influence was understood to result in the issues of participation fatigue and extractive research.

Another common experience, however, was that the municipality was not active enough to address certain socioeconomic challenges. During the co-creation sessions with the residents, many conversations touched on complex and interconnected social problems, including energy poverty, social isolation, the sense of disempowerment, the housing corporations' uncooperative stance, and so forth. When something seemed irresolvable, a common reaction was: 'the municipality should do something'. In this way, whilst the municipality was perceived to hold *power-over*, they were also perceived to not have sufficient *power-to* to address key challenges. Whenever we raised these issues in the

project consortium, the municipal representatives often said either that these issues were not the responsibility of them or their department, or that they were not at all within the power of the municipality to address. A general experience of working with the municipality was that responsibilities were distributed over diverse departments, making it impossible for any single department to assume responsibility to exercise *power-to* to address the complex, interconnected social issues which span across multiple domains.

One important avenue for the municipality to support community initiatives is through subsidies, which are characterized by *balanced reciprocity* in the sense that there are explicit and well-defined results and deliverables which the subsidies should result in. Given the sense of *negative reciprocity* among the residents, we felt that it would be constructive to attempt to reduce the *social distance* between the municipality and the residents – perhaps it could open up new pathways for relations to form that are not mediated by policy agendas and other institutional mechanisms. After all, such mechanisms primarily operate on the logic of *balanced reciprocity*. As is reported elsewhere, we facilitated a session between several residents and key decision makers in the municipality. This session resulted in interesting conversations, where some mutual understanding was reached. E.g. one municipal representative reflected that maybe the municipality should simply invest in strengthening local relations and collaborations within the neighbourhood for 5 years, before expecting any more complex energy transition projects to take place – this would be a form of *generalized reciprocity* purely intended to support local *empowerment*. Still, whilst this session was generative in the exchange of experiences and perspectives, avenues for tangible institutional change remained unclear.

Residents – Distribution System Operator

The Distribution System Operator (DSO) in this area, Alliander, was an important partner in the LIFE project. After all, the aim of reducing grid congestion is primarily their responsibility. In their role of infrastructural manager, the DSO is very much in the background, according to both themselves and the residents. In fact, many residents have little awareness of this organization and what they do. As long as the electricity grid functions according to expectations, there is – in the present system – little reason for any social relationship to exist between these two parties. However, as is also discussed in a plethora of previous energy research, the role of the DSO may become much more active in a decentralized

energy system where local energy production and consumption must be aligned using deliberate techniques and strategies which involve interaction with energy users – such as demand response. With the initiative to establish a local energy community, several investigations were done to envision the local energy transition futures of the neighbourhood, and to interpret the potential consequences for grid congestion.

In these investigations, we acted as *mediators* who translated the information from the DSO towards the residents. A key aspect to emphasize is that the structure and status of the electrical grid provides the boundary conditions for the future energy transition scenarios of the neighbourhood. In this sense, the DSO holds a degree of *power-over* the entire process, based upon their technical infrastructural management, and the extent to which they provide other actors insight into their activities. If grid management is to become more decentralized in the future – as is the widespread expectation in energy research – this might require the DSO to share tasks, and hence share power, with other actors. In this research, we experienced that the DSO was in the process of figuring out how this power could, and should, be shared, particular in the form of data and information. The DSO was hesitant to share data about the status and structure of the electricity grid, partly because of regulatory constraints, and partly – as we understood it – because of internal organizational resistance. The data would only be shared after a long period of negotiation, where the DSO wanted the exchange to occur as *balanced reciprocity*, where the sharing of the data results in clear benefits and outcomes. We should emphasize that this data was crucial in moving the project activities forward, and that these difficulties resulted in delays for the whole project.

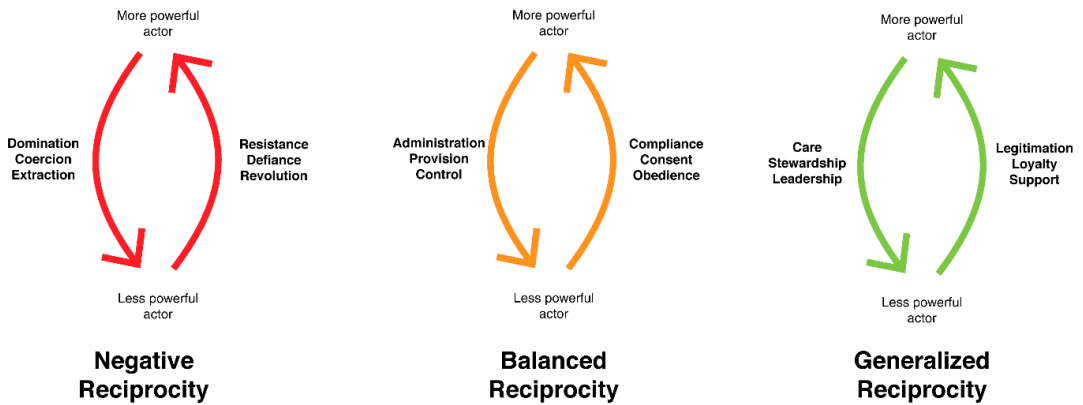
Key constraints were that future solutions should not lead to an exacerbation of grid congestion issues, and ideally, that they can help reduce congestion issues in the area. Further explorations were conducted to envision how the DSO could incentivize, or compensate these efforts with pricing mechanisms. In this way, these investigations were efforts to explore how the local energy community could have *power-to* – or, *power-with* with the DSO – to address grid congestion issues, as well as a relationship of *balanced reciprocity*, where demand response is exchanged for financial compensation. Furthermore, these efforts also explored how relationships of *negative reciprocity* can be avoided, where energy users pursue their own interests and thereby exacerbate the collective problem of grid congestion.

A final, interesting consideration concerns the manner in which any relationship between the DSO and energy users would be mediated. At present, the DSO organization is highly technically-oriented, and has little need to be concerned with issues such as 'user experience'. This is reflected in the type of energy innovations with which DSO was concerned in this project, where the envisioned solution - as a smart ICT platform - is a technological product more than a sociotechnical innovation. If such platforms are implemented, it may be more appropriate to speak of relations *with* the platform rather than *mediated* by the platform. In both cases, the platform itself and its design hold significant power in the relationship.

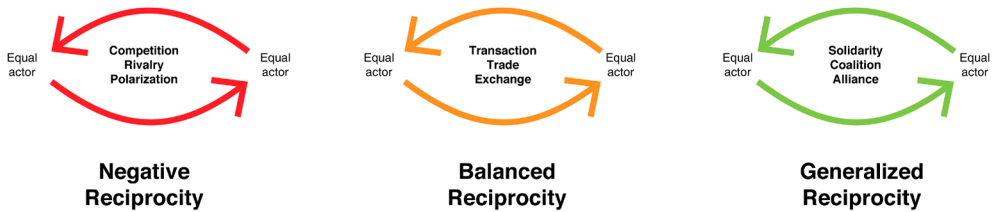
9.4 A Framework for Power Relations

Using the concepts of power and reciprocity, the study reported above a rich and complex picture of the social relations which existed, emerged and were envisioned in the context of multifaceted local energy transition project in Amsterdam Southeast. Whilst the results provide various interesting directions to pursue, the present purpose is very specific: it concerns those instances where the existing language appears insufficient or lacking to provide explanation. Using the abductive reasoning approach, which operates by identifying surprising insights, several anomalies are identified:

1. The project described featured relations between actors of diverse form and magnitude. In particular, relationships between institutional actors - including LAO's, municipality, universities - and households appear as qualitatively different than relationships among households. Therefore, a distinction between *vertical* or *asymmetric* power relations, where one actor clearly has more power than the other, and *horizontal* or *symmetric* power relations, where two actors have approximately equal power, is required.
2. The concept of power-with aligns with generalized reciprocity, but does not distinguish between vertical and horizontal power relations. For example, a relation between a household and an energy community, and a relation between two households may both be characterized by power-with and generalized reciprocity, but are qualitatively different.



Vertical or Asymmetric Power Relations



Horizontal or Symmetric Power Relations

Figure 9.1: Framework for power relations in local energy transitions. The top half shows vertical relations based on power asymmetry, whereas the bottom half shows horizontal relations based on power symmetry.

3. The concept of power-over only refers to vertical relationships based on negative reciprocity. However, horizontal relationships based on negative reciprocity - such as the observed conflict in the neighbourhood platform which split into two competing platforms - is not designated.
4. Relationships based on balanced reciprocity are not captured by power-over or power-with, even though they can still exist as vertical power relations. Consider for example the relationship between

households on the one hand, and LAO's, the DSO and the municipality on the other.

To account for these gaps, a more integrated understanding of the interrelation between power and reciprocity is required. This is provided by the framework in Figure 9.1 and Table 9.1, which shows how both vertical and horizontal power relations may be characterized by generalized, balanced and negative reciprocity. For horizontal power relations, the back-and-forth dynamic is symmetrical. For vertical power relations, there is a distinction in directionality. There is a difference between, on the one hand, the less powerful actor acting towards the more powerful actor, and on the other hand, the more powerful actor acting towards the less powerful actor. In Figure 6.1, the arrows represent an 'acting upon' or 'acting towards': it represents those actions, interactions and exchanges which sustain and co-shape the relationship. Each of these directional actions is characterised by multiple terms which, depending on the context, can characterize its nature.

Table 9.1: Framework for power relations in local energy transitions.

	Directionality	Negative reciprocity	Balanced reciprocity	Generalized reciprocity
Vertical power relations	Top	Domination	Administration	Care
	Towards	Coercion	Provision	Leadership
	Bottom	Extraction	Control	Stewardship
	Bottom	Resistance	Compliance	Legitimation
	Towards	Defiance	Consent	Loyalty
	Top	Revolution	Obedience	Support
Horizontal power relations	Symmetrical	Competition Rivalry Polarization	Transaction Trade Exchange	Solidarity Coalition Alliance

This framework captures how social relations can be shaped by different configurations of power and reciprocity, distinguishing relations based on coercion and resistance, administration and consent, leadership and loyalty, competition, trade and solidarity. It is important to emphasize, following the discussion in Section 6.2, that power is not an inherent capacity of actors: it is situated and context-sensitive. The power relation between two actors can be

different or even reversed if the actors are situated in a different context. Hence, an identification of a single vertical or horizontal power relation is always nothing more than a temporary heuristic to serve a particular purpose in a specific situation.

9.5 Discussion

This discussion section proposes that the framework presented above can serve to study, imagine and experiment with relations in energy transitions in a variety of novel ways. The relevance of this study to several lines of inquiry in social energy research are discussed here.

First of all, a conceptual insight into the interrelation between social relations, power and reciprocity can serve a further understanding of how relations are shaped, and the kind of relational work and power-work that is required. Already, relational work has been identified as a crucial aspect of how people building collaborations and form communities (Middlemiss et al., 2024). Since relational work is often characterized by power dynamics, an understanding of power serves a better understanding of relational work, particularly if the collaborations under concern involve human and institutional actors of diverse forms and varieties. In the context of energy transitions which is tightly governed by policy regimes and technological constraints, power becomes an even more important factor to understand how these greater systems shape social relations locally. This understanding of power-work and relational work can further inform action-oriented research approaches (de Geus et al., 2023) in which researchers can investigate the relations they are part of through reflexivity (Christley et al., 2025; Devine-Wright & Ryder, 2024). Furthermore, relational work has been found as required to mediate power relations (Sanchez Nieminen & Laitinen, 2025), and can serve to co-create value rather than deliver value (Mihailova et al., 2022). To gain further understanding in relational work and power work, and how it can contribute to community-building, a further engagement with insights from anthropology would also be informative.

The next point of relevance is that this study contributes to ongoing debates and research into power theories. This study emphasizes the need to distinguish and consider both vertical, or asymmetric, and horizontal, or symmetric, power relations. In doing so, it responds to studies who criticize

vertical frameworks in favor of horizontal understandings (Avelino, 2017). This study proposes that the importance of both types should be considered. Furthermore, the framework presented highlights power relations which are not captured by the power-over, power-with, power-to distinction (Avelino et al., 2023). For example, relations characterized by leadership, resistance and competition are here conceptualized in terms of power, and distinct from domination – as power-over – or solidarity – as power-with. The relations characterized in this framework should be further investigated in empirical and theoretical study. A question of particular interest concerns the dynamic and temporal aspect of power: how different kinds of power relations co-shape, transform and entangle in situated social contexts (Nightingale & Ahlborg, 2018). This conceptualization would amount to an understanding of power *dynamics*. Furthermore, structural or constitutive forms of power should also be investigated in terms of their influence of shaping relations. A hypothesis might be that structural power plays an important role in mediating reciprocities.

Next, the study of social relations, power and reciprocities may be informative for the energy community literature. Studies have found that do not empower all members to the same extent (Bögel et al., 2023), that they have difficulty in reaching vulnerable groups (Hanke et al., 2021) and implementing energy justice (Hanke & Lowitzsch, 2020). For such challenges, an understanding of how social relations co-shape with energy communities would be informative: it is through trusted relations that vulnerable groups can be reached. Furthermore, trust and social capital – as fundamentally relational aspects – have been found as crucial to the success of energy communities (De Simone et al., 2025). Beyond relations within the community, the relationship between energy communities and institutional actors is important to address structural challenges (Bonfert, 2024). Such relations are likely asymmetric, which underscores the importance of distinguishing vertical power relations. Overall, for energy communities there may be a potential tension between equality – as the goal of providing equal access to all – and relationality – where organic growth occurs through pre-existing relations of trust and collaboration (Peeters et al., 2025).

A further important direction which should be explored is the connection between the relations described in the framework, and emerging technological and economic energy innovations. For example, the manner in which emerging P2P markets, tariff structures and contractual arrangements interact with

community economies would be of interest (Al-Hanahi et al., 2025; Arias et al., 2025; Roversi et al., 2022). Such innovations might have much to gain from a more in-depth engagement with economic anthropology, if they are to be embedded in local social and cultural life of people and communities (Singh et al., 2017, 2018). Furthermore, user-facing smart energy products and services (Geelen et al., 2013), and especially smart energy platforms (Boekelo & Kloppenburg, 2023; Kloppenburg & Boekelo, 2019) can play a determinative role as mediators of reciprocities between energy users and other energy actors, such as the DSO. The mediating role becomes even more important in more interconnected systems, such as smart local energy systems (Ford et al., 2021). Finally, the role of the electrical grid itself – in structuring the boundary conditions for social and power relations to form and transform in a particular context – should be further investigated, for example as with the problem of, and solutions to, grid congestion (De Winkel et al., 2025).

Finally, an area of particular importance and relevance in the present study concerns vertical relationship between citizens and institutions. Such relations are often discussed implicitly in the social energy literature, but with the concept of vertical power relations, these can be considered in a more explicit fashion. For example, relations of public participation can be characterized as vertical power relations (Arnstein, 1969; Chilvers & Longhurst, 2016). It would be informative to reframe energy justice through the lens of power relations (Jenkins et al., 2016), given that justice is often implemented by a top-down, institutional actor. This would fit with the call to deindividualize energy justice (Taiwo & Tozer, 2025), with the observation that the relation between rural communities and urban transition agendas is characterized by power (Salonen, 2025), and with studies of ombudspersons as neutral intermediaries of relations between institutions and citizens (Stojilovska, 2024). The same goes for relations between households and other institutional energy actors, which generally have more resources and expertise. It can concern here the relationship between households and the DSO, energy communities (Bauwens et al., 2022) or energy service companies. With the framework provided in this paper, these relations can be characterized according to their reciprocal character – as forms of domination and resistance, stewardship and loyalty, administration or compliance, or with other terms that have been put forward. These framings are informative for understanding, experimenting with, and shaping, desirable relations between citizens and institutions. Along similar

lines, there is potential to reframe and theorize energy citizenship through a relational lens, focusing more on processual and dynamic aspects (Kluskens et al., 2025; Lennon et al., 2020). Energy citizenship can be regarded in terms of doing relational work and power work in the context of energy transitions, rather than the harnessing of technological innovations for entrepreneurial endeavors. Similarly, frameworks of energy democracy and other civic capacities often include relational aspects, such as social capital, which can be made more explicit and central (Wahlund & Palm, 2022; Webler & Tuler, 2025).

9.6 Conclusion

Based on key concepts from power theories and economic anthropology, this article positions a framework for power relations in local energy transitions. This framework distinguishes vertical and horizontal power relations and typifies their character under different reciprocal modalities. This framework has followed from an empirical study of a local energy transition project in Amsterdam Southeast, where the relations between local residents and other energy actors - including researchers, large asset owners, other neighbourhood actors, the municipality and the DSO - were investigated. The proposed framework contributes to existing debates on power and social relations, and has potential to inform a number of scholarly debates in social energy research, which have been outlined above. At the same time, this study also has limitations. Most importantly, whilst the situated, ethnographic and abductive approach allowed for greater conceptual creativity it is not as methodologically systematic as other research designs. Therefore, the proposed framework should be treated as a hypothesis, the validity of which should be further investigated, tested and confirmed or falsified in theoretical and empirical study. Furthermore, this study is based on a single context and project, and its findings should be tested in other contexts.

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10

CONCLUSION

This concluding chapter performs several tasks. To start, it provides a comprehensive chapter-by-chapter summary of the content of this dissertation after which it synthesizes answers to the two research questions. It then lists the contributions that this dissertation makes to various bodies of literatures and provides a reflection on the research and its limitations. Finally, it offers pointers for future work.

10.1 Summary

CHAPTER 1 AND 2

This dissertation describes an interventionist design anthropology study that aimed at transforming power in the local energy transition in Amsterdam Southeast. Intervention was the starting point rather than the final outcome of this study, which made reflexivity on my embeddedness in institutional structures and greater transition pathways a core concern. At the core, the question of power concerns how researchers can contribute to societally meaningful and beneficial outcomes, while being constrained and nudged in their agency and working in tandem with a variety of other actors and interests.

The study was embedded in the Local Inclusive Future Energy (LIFE) project, a broad, multidisciplinary consortium which consisted of several heterogeneous organizations, including the municipality of Amsterdam, universities, energy technology companies, and local stakeholders including the Johan Crujff ArenA. The aim of the project was to develop smart solutions to address joint social and technical problems in the local energy transition, specifically the congestion of the electricity grid, and issues of social inclusion and energy poverty. Our role in this project was to address the second challenge by engaging residents from the local neighborhood of Venserpolder. Initially, our efforts were aimed at exploring how the envisioned output of the LIFE project – a ‘smart energy platform’ – could be user-friendly, and provide value, to residents of the Venserpolder neighborhood, for example by reducing energy poverty.

The research approach is characterized by several key components. The ethnographic and interventionist approach of design anthropology provides the foundation. This approach is situated in the multi-actor collaboration in the LIFE project, and makes my positionality as a researcher explicit. The research activities were enabled and constrained by the activities and dynamics of this consortium, meaning that power is internal, rather than external to the research design. For this reason, starting assumptions of the research include a relational ontology (Escobar, 2018, 2020), the notion that knowledge should serve intervention in the world (Stappers & Giaccardi, 2017), and an approach to knowledge creation founded on abductive reasoning (Tavory & Timmermans, 2014)

CHAPTER 3

Chapter 3 positions a framework for understanding the relationship between design and power, in the context of transitions. It does so based on a broad overview of relevant literatures, and is informed by my empirical research, although this chapter does not report on the latter. The framework positions five dimensions, whereby it provides key definitions, outlines key arguments and provides numerous directions for further research into the connection between power, design and transitions. In doing so, this chapter is a core part of providing answers to the research questions. The five dimensions of the framework are listed below.

1. *Agency*: Design is positioned as a way of exercising agency, which is defined as value-laden action which opens up to contestation.
2. *Relationality*: Power relations are defined as the interdependencies in capacity for action. The various ways in which design intervenes in power relations are reviewed, including participatory and relational design.
3. *Temporality*: Power dynamics are defined as the process by which power relations transform through the interplay between mechanisms of emergence and control. This definition is related to an exploration of design as a future-oriented practice.
4. *Scale*: The enactment of power dynamics at and between different levels of scale is discussed. In doing so, the diverse ways in which design intervenes at these different levels is reviewed.
5. *Abduction*: The co-shaping between the non-human actors of design - artefacts, concepts, visuals - and power dynamics is discussed, and related to an understanding of design as informing sensemaking in transitions through abduction.

Based on these dimensions, the chapter characterizes transition-design-as-power-work by describing an iterative loop of agency and reflexivity which serves for designers to understand the role of power in their work and projects.

CHAPTER 4

Chapter 4 dives into the ethnographic fieldwork, and focuses on the initial frictions which my visits to Venserpolder gave rise to. It does so through several detailed vignettes which describe interactions and conversations that I had with residents and community leaders. In these conversations, residents described their experience of participation fatigue from previous projects, as they reported that researchers from various universities frequently visit the area to investigate its supposed socio-economic and socio-cultural challenges. Furthermore, they did not perceive the activities of the LIFE project – as focused on grid congestion and on developing a ‘smart energy platform’ – as relevant for their needs. From these interactions it became clear that the project framing was severely disconnected from their needs, and that a different approach would be required to provide beneficial outcomes for Venserpolder. Based on the ethnographic vignettes, this chapter identifies three key frictions for ethnographers working in the context of energy transitions:

1. The Invisibility Of Energy Infrastructure And Lack Of A Relatable Narrative
2. Past Experiences of Public Participation In The Energy Transition
3. Temporal Mismatch In Energy Infrastructure Innovation

It also suggests various pathways forward, based on these frictions and the design anthropology approach, for addressing these frictions:

1. Ethnographers mediate between citizens and institutions
2. Making energy systems more experienceable and infrastructures more tangible
3. More activism by ethnographers intervene in institutional context
4. Embedding, institutionalizing long-term partnerships with local organizations

CHAPTER 5

Chapter 5 builds on the ethnographic frictions reported in chapter 3, to interpret how the LIFE project consortium activities could, and could not, be reframed based on these findings. It explicates the manner in which project goals and activities had been institutionally and bureaucratically structured from the

beginning. Furthermore, it describes our efforts as participants in the LIFE consortium to navigate these constraints. It does so through the lens of design ethics, and characterizes design ethics as dynamic, emergent and situated in, and internal to, the design process and its daily activities, micro-decisions and interpersonal interactions. The chapter positions key contributions from design anthropology to design ethics, focusing in particular on the openness to uncertainty and emergence, and the practice of care towards human collaborators, which serves to interpret how their interests and activities are shaped by broader societal structures and forces. Whilst this chapter does not report on power specifically, and whilst design ethics are not part of the overarching research questions of the dissertation, working on design ethics served to understand how I should navigate diverse actor interests, needs and influences.

In terms of empirical findings, the chapter describes:

- How our research activities were initially strongly shaped by the historical momentum of the LIFE project proposal and its bureaucratic structuring.
- How we attempted to 'reframe' the project activities, and what constraints we encountered in this process. This includes having to work on 'use cases' with our project partners, despite disagreeing with this framing, as well as the inability to restructure project funding, hours, deliverables. We describe the risk that 'reframing' happens in a bureaucratically demarcated bubble.
- The ethical uncertainties and questions associated with asking vulnerable citizens to participate in high-uncertainty projects, when it is unclear whether their participation results in real value creation.

CHAPTER 6

Chapter 6 is a brief conceptual paper which investigates how design fiction can be mobilized for supporting human-centered energy transitions. Whilst the discussion of design fiction is seemingly disconnected from the rest of the dissertation, it can be seen in light of the recommendations in Chapter 3 that energy transitions should be made tangible and experienceable. Furthermore, design fiction can be seen as an enactment of the use of 'designs' in supporting sensemaking in transitions, which is one of the dimensions of power in Chapter

2. For several reasons, most notably the absence of appropriate design skills and resources within the research team, the conceptual directions proposed in this paper were not followed up with tangible designs.

Overall, design fiction is positioned as a form of worldbuilding which not only represents alternative realities but also intervenes in the processes of their emergence. For the context of energy transitions, this article proposes to approach worldbuilding through an understanding of and engagement with energy infrastructures. The distributed agencies and lengthy time horizons of infrastructures can be subverted by leveraging the poetic and aesthetic qualities of infrastructure through design fiction. The chapter identifies seven emerging energy worlds which can be taken as a starting point for design fictions:

1. Crumbling Grid
2. Techno-capitalist Monopoly
3. Autonomous Energy Community
4. Smart Energy Household
5. National Energy Commons
6. Smart Energy Hub
7. Local Energy Institution

CHAPTER 7

Chapter 7 is a core article in this dissertation, which engages with the complex entanglement between the future orientations of design anthropology, the need to engage in transformative societal action, and the associated relational and personal transformations. The chapter adds to an emerging scholarly literature on future-making by positioning design anthropology as an approach to understand and engage with future-making practices in their everyday, emerging and informal enactments. To existing work on design anthropology, this chapter adds an element of transformative action, as well as grounding in ontological design. The result is an original approach named Ontological Future Making, which aims at transforming the ontological conditions which inhibit the emergence of shared futures. As such, Ontological Future Making is positioned as a fundamentally relational activity: it is through the creation of shared future orientations, that the future is made.

Ontological Future Making approach is delineated in three distinct steps:

1. To develop an understanding of the *future orientations* of diverse actors involved in a project, as well as the conditions that constrain and define these future orientations.
2. To identify how differences in future orientation between actors give rise to *immediate tensions in the present*.
3. To *transform ontological conditions* so shared future orientations can emerge, thereby enacting future making.

Empirically, this chapter provides further detail and richness to what has been described in the earlier papers – including the issue of research extractivism and efforts to reframe the project. Additionally, it describes how these reframing efforts resulted in a shift in focus from technological innovation towards supporting local energy governance. Concretely, this resulted in the initiative to establish a local energy community in the Venserpolder neighborhood. This local energy community was not merely the new ‘future outcome’ of the project, but rather a precondition for further shared futures to form in the neighborhood. This is because founding a local energy community performs two types of transformative work: the strengthening of local relations and collaborations, and the mobilization of collective resources. The chapter describes how we conducted a series of co-creation workshops with the residents, and what we learned from these workshops.

Based on this research, this chapter argues for future-making to be more *direct, political* and *relational*. It suggests that future-making becomes inherently value-laden rather than value-free (Comi et al., 2025), and that framing futures as long-term, distant temporalities distracts from present action, where they can be transformed and realized. In terms of design anthropology, it contributes to the next twist of the reflexive turn as “the anthropologist’s deliberate and reflexive participation in the production of artefacts” (Gatt & Ingold, 2013, p. 154), as well as fostering a ‘style of acting’ rather than a style of knowing (Otto & Smith, 2013).

CHAPTER 8

Chapter 8 engages the core interests of the dissertation directly, and positions design anthropology as an approach for transforming power relations in

societal transitions. It is situated in the scholarly context of public administration, and hence engages with literatures on co-production and public participation, as well as transition studies, design anthropology, participatory design and adjacent fields. Conceptually, this chapter mobilizes theoretical understandings similar to those discussed in chapter 2, focusing on agency and relationality, and identifying power relations as the key phenomenon of interest. It positions design anthropology as a key approach for engaging with, and intervening in, power relations from a situated perspective which explicates the positionality of the researcher. As part of the empirical reporting in this chapter, three key power relations are identified. For each of these power relations we describe the power relation that we encountered, the design intervention that we implemented, and the transformative outcome that we attained. These power relations and their transformations are hence described in a local and specific manner. The three power relations are the following:

1. The lack of collaboration within the LIFE consortium, in particular the divide between social and technical partners. To bridge this divide, we replaced the technological platform with a 'local energy institution', which served to shift the focus from technological innovation to local governance, and thereby repoliticize the project activities.
2. The challenges with engaging local residents in co-creation workshops, due to historically extractive research and participation fatigue. To address this challenge, we initiated a reciprocal engagement with the residents by providing financial compensation and other small gestures. These small actions resulted in the establishment of an energy community in Venserpolder which, for us as researchers, was a careful balancing act between acting as key initiators and decision-makers, and transferring this power to the local community.
3. The deficient relationship between the residents and municipal representatives. We organized a co-creation workshop where conversations between these two groups could take place, and where some mutual understanding was created. Such conversations can be meaningful transformations of power, to the extent that they contribute to longer-term transformative transition pathways.

Based on these findings, the chapter describes key implications for design and power under several themes:

- *Designers as brokers of power*: the role of designers in societal transitions is described as power-brokers, who perform relational-work and power-work to challenge, distribute and transform power between diverse actors.
- *Beyond 'balancing' power relations*: the common notion of 'balancing' power relations is characterized as simplistic and unrealistic, and instead, this chapter advocates for recognizing power asymmetry as a reality that must be worked through.
- *Design as a dialectic between social issues and solutions*: rather than being 'problem-solvers', designers go back-and-forth between positing solutions to problems, and complexifying problems by drawing attention to greater social, political, cultural nuances.
- *Transformation of the positionality of the designer*: in doing power-work, the positionality of the designer themselves is transformed, which means that a practice of reflexivity is crucial for designers to understand and interpret the power relations which they themselves are entangled in.
- *What is the entity 'to-be-designed'?*: if designers do not unambiguously create solutions to problems, then what is the entity 'to-be-designed'? Rather than concrete entities, designers' work in transitions amount to building and restructuring relations, and by supporting sensemaking processes for transition actors.

CHAPTER 9

Chapter 9 focuses more specifically on the context of energy transitions, and provides a framework for power relations based on concepts of power and reciprocity. More specifically, it draws from relational perspectives on power (Ahlborg, 2017) to define power relations as the interdependencies in capacity for action, drawing from conceptions of power-to, power-over and power-with for further richness (Avelino et al., 2023). This understanding of power relations is combined with theory from economic anthropology, specifically Marshall Sahlins' theorization of generalized, balanced, and negative reciprocity (Sahlins, 2011). By combining these two concepts, the paper develops a framework for

distinguishing different types of power relations in energy transitions. In doing so, it is able to provide further insights and terminology beyond the common distinction of power-to, power-with and power-over (Avelino et al., 2023). Besides the focus on power relations, this framework is positioned as contributing to emerging scholarship in energy research which focuses on social relations. This relational lens is characterized as valuable for complexifying common framings in energy research which focus on individualistic, materialistic and entrepreneurial qualities of energy citizenship, innovation and communities.

Empirically, the chapter reports on how relations were encountered, emergent and envisioned within the LIFE project. Using the design anthropology approach, these relations are described from our situated and ethnographic perspective, making use of the concepts of power and reciprocity which have been discussed. The empirical findings focus on the relations between the residents in Venserpolder and five other key actors:

1. Researchers
2. Large asset owners
3. Other neighbourhood actors
4. Municipality
5. Distribution system operator

Using abductive reasoning, we interpret how the concepts of reciprocity and power are, or are not, sufficient to characterize the types of relations encountered. As a result of this effort, the chapter describes a framework for power relations which:

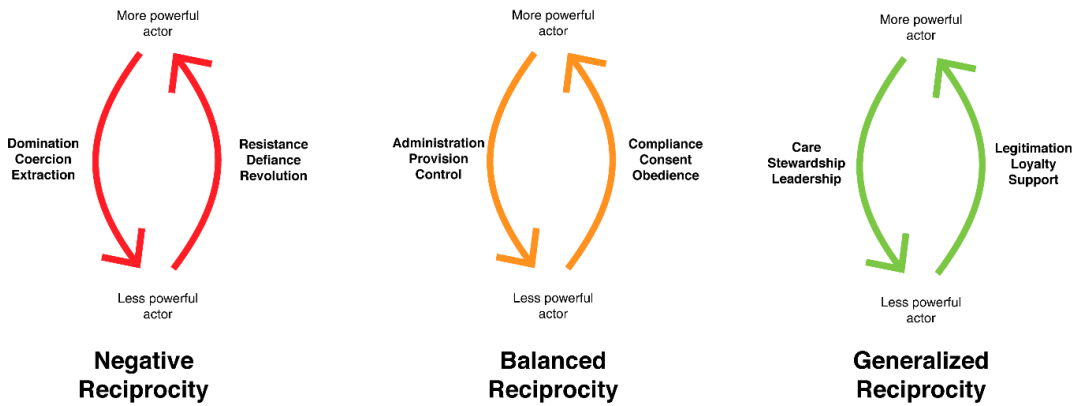
- distinguishes *vertical* or *asymmetric* power relations, with *horizontal* or *symmetric* power relations;
- characterizes different power relations according to different reciprocal modalities of *generalized*, *balanced* and *negative* reciprocity;
- distinguishes vertical relations based on domination and resistance, administration and consent, care and legitimation;
- distinguishes horizontal relations based on competition, transaction and solidarity.

10.2 Answering the Research Questions

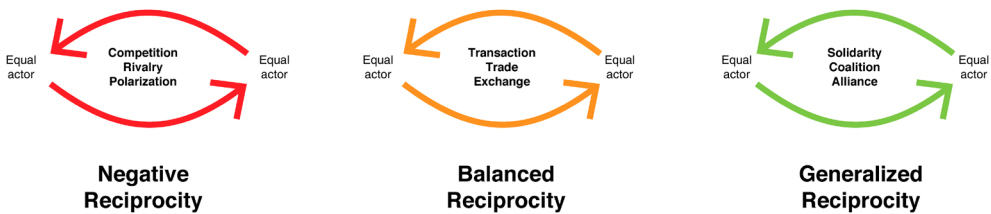
The first research question was formulated as *What is the relationship between design and power, in the context of transitions?*

Overall, this dissertation positions power not as a problem that can be solved, nor as an insurmountable barrier that is best ignored, nor as a form of coercion that is privy to tyrants and Machiavellians. Rather, power is a multifaceted, multidimensional phenomenon that is implicit in many aspects of designing in transitions, and that best made explicit by designers, so that they can continually navigate and negotiate power issues in a careful and intentional manner. Power is considered as a situated and context-sensitive phenomenon, that is in fact inherent to the relationship between a designer and their context. Therefore, an understanding of power is always mediated by personal experiences. Power consists in all those factors which enable and constrain the capacities of designers and other transition actors - including citizens, communities, governments, businesses, and researchers - to realize their interests, and to influence and co-shape transition pathways through deliberate action. To understand and explicate these diverse factors this dissertation has distinguished five dimensions. The relationship between design and power can be understood through the sequential layering of these five dimensions, where each subsequent dimension incorporates, and builds upon, the former.

The starting point is agency, as designers must explicate and chart their own exercise of agency, which is defined as value-laden action which opens up to contestation. When this agency is made explicit, the next step is to understand how it is shaped by relationality. When our own agency enters into relation with that of other actors, power relations form, which are defined as the interdependencies in capacity for action. Such power relations may then be considered in their dynamic and emergent character, which is inherent in the third dimension of temporality. The flux and evolution of power relations amount to power dynamics, which are characterized by an interplay of mechanisms of emergence and control. The enactment of power dynamics may then be considered within and across different levels of scale: the fourth dimension. Designers are active in local communities, policy contexts, and act as mediators between them, which requires different kinds of sensitivities. Finally, the role non-human design actors - such as artefacts, concepts and visualizations - in power dynamics can be understood in the fifth dimension of abduction.



Vertical or Asymmetric Power Relations



Horizontal or Symmetric Power Relations

Figure 10.1: Framework for power relations in local energy transitions. The top half shows vertical relations based on power asymmetry, whereas the bottom half shows horizontal relations based on power symmetry.

These findings, and an increased focus on the relationship between design and power, have several implications. Designers should be regarded as power-brokers, who perform relational-work and power-work to challenge, distribute and transform power between diverse actors. In doing so, designers should go beyond balancing or equalizing power relations, and rather aim to acknowledge

and work with power asymmetries. Designers should strike a careful balance between positing solutions to problems, and complexifying problems as social issues with a nuanced social, cultural and political character. A reflexive practice is crucial for designers who perform power-work, and the aim shifts from designing concrete entities to supporting the organic restructuring of relations by supporting sensemaking processes.

Finally, the existence of diverse types of power relations is hypothesized in transitions. Importantly, *vertical* or *asymmetric* power relations can be distinguished with *horizontal* or *symmetric* power relations. Both these types may then be considered for diverse reciprocal modalities of generalized, balanced and negative reciprocity. The resulting framework, which distinguishes vertical relations based on *domination* and *resistance*, *administration* and *consent*, *stewardship* and *loyalty*, and which distinguishes horizontal relations based on *competition*, *transaction* and *solidarity* can be found in Figure 10.1.

The second research question was formulated as *How can design address and transform power in the context of transitions?*

At various points in this dissertation, pointers are provided towards a design approach that can transform power – Chapter 2 speaks of *transition-design-as-power-work*. In this understanding, designers' primary aim is to restructure – or, to enable the organic restructuring of – social relations between transition actors. This pertains to both relations that are formalized and institutionalized, and that are informal on the basis of e.g. cultural associations. Supporting the restructuring of relational infrastructure constitutes the substantive foundational work which is required for more tangible transition 'solutions' to emerge from novel fruitful collaborations. Importantly, *transition-design-as-power-work* hence supports solution-finding without jumping into solutionism. As discussed throughout the dissertation, this relational focus brings an intrinsic difficulty in engaging with power. Because of the situatedness and context-sensitivity – which derives from relationality – I refrain from formulating a discrete method, as a 'tool', as a linear sequence of steps to follow. It is unlikely that such a discrete method could be context-independent, and hence, it would be a limited instrument that – besides not being fit-for-purpose in various contexts – may itself become the cause of power issues. Instead, the approach developed is necessarily informed by the designer's tacit knowledge in

navigating sociopolitical dynamics. This tacit knowledge is mobilized through a design anthropology approach which, through its ethnographic, interventionist approach and focus on emergence – is well equipped to capture the messiness, situatedness, and context-sensitivity of power issues.

A key principle for a design approach that aims to transform power is that *inaction is impossible*. In this research, this is illustrated by the fact that intervention was the starting point, not the final outcome of the research. Instead of starting with a literature review and the identification of a gap, the topic of this research was motivated by the fact that I was embedded in a prenegotiated project context, which thoroughly shaped, enabled and constrained my scope of possible actions. My initial interventions were the result of our embeddedness in a greater project consortium, which was in turn embedded in greater energy transition developments. This is important to emphasize: in the context of societal transitions, research or design activities never take place in a vacuum, but are always shaped by historical decisions, path-dependencies, and negotiations. It is as much through such historical momentums that our initial interventions were shaped as through active agency on our own behalf. It is through undergoing these interventions, letting them be shaped by historical events, experiencing and reflecting on their successes and failures, and interpreting the factors that shaped their outcomes, that conceptual understanding of power emerged along the way. If we consider transition contexts as settings of continuous flux, fluidity, and change, the first step is to set a course of action – partly autonomous and partly informed by other agencies – and interpret the diverse powers that are pulling us into different directions. In a transition context, non-action is not a possibility – passivity is an implicit support for the status quo, and for other interests to ‘go ahead’, and to bully us around. I reflect that, if we had not engaged in action from the beginning, the transformations which were achieved would not have been possible, as the ‘window of opportunity’ would have closed for this project.

To combine attentiveness to the historically driven unfolding of events, with future-oriented intervention and an awareness of power dynamics, chapter 6 positions the concept of *transformative action*. Transformative action consists in taking an explicit value-driven stance in the fluid field of emergent social dynamics and interactions, where outcomes can be shaped but are also contingent, and where roles and responsibilities are not fixed. It is the in-

between space where relations transform, and where certain realities become stabilized over others. Navigating such a space requires a tacit knowledge in facilitating interpersonal dynamics, a skillset for which designers are well positioned. At the same time, transformative action requires an awareness of the greater societal and institutional forces beyond this in-between space, and of how these forces co-shape power dynamics, and of the extent to which outcomes can persist when exposed to these forces. Importantly, transformative action requires courage, and for designers to have 'skin in the game'. After all, the role and positionality of the designer is also subject to transformation, in this action.

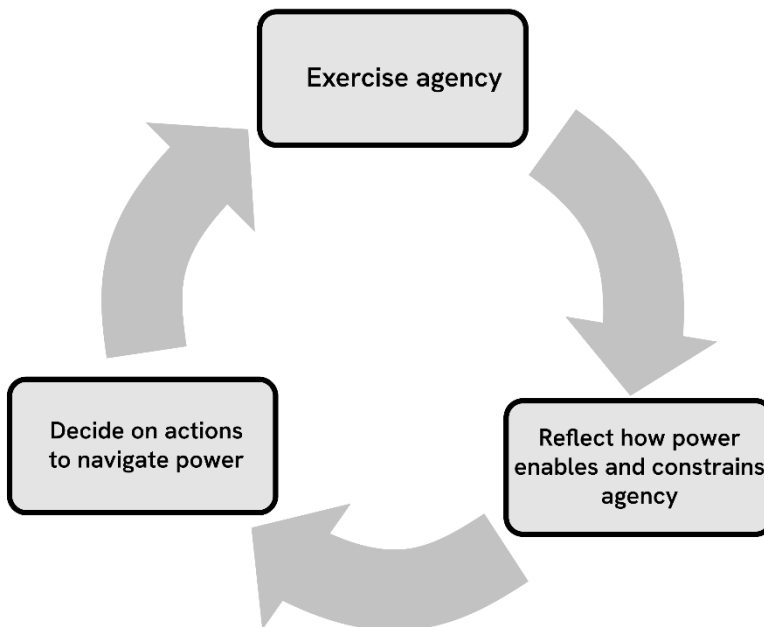


Figure 10.2: A simple loop for performing power-work, which consists in the exercise of agency, and reflection on how this agency is enabled and constrained by power.

Because of the transformation of their positionality, a core for designers who perform power-work is *reflexivity*. By reflecting on their own experiences and embodied positionality, designers can begin to understand the powers that enable and constrain their agency. Such reflections, which concern our own experience, positionality, and transformation thereof, are typically structured in the form of narratives. I emphasize the importance of sticking closely to the

originality of such narratives and of resisting their generalization, breaking-apart, and reification through scientific analysis and reasoning. After all, as has been discussed in chapter 1, such reasoning is itself a form of power, and will distort the meanings which may be interpreted from the original narrative. It is only by maintaining a close coherence between our lived experiences and our written empirical reporting that our personal reflections can form a valid form of data.

Simply put, transition-design-as-power-work consists in an *iterative loop of action and reflection*, shown in Figure 10.2. This iterative loop consists in exercising agency, and reflecting how this agency is enabled and constrained. In this reflection, diverse powers may be recognized, for which the answer to the first research question is informative. These powers are relational, and consist in the connection with other people, institutions, and societal structures – in the present, past, and future. To transform power means to reshape our relations to these other entities. Whilst this dissertation has discussed a number of different types of power relations and the manner in which they can manifest, I emphasize here that these discrete framings should always be considered as practical heuristics that service particular and situated design purposes. After all, ‘relations’ can only be defined by removing them from the context of their emergence, and reifying them into a graspable concept. As such, they serve the purpose of deciding on a further course of action. Such actions can include engaging in reciprocal exchanges, resisting institutional forms of control, reframing the imaginations that we mobilize to make sense of the non-proximate, or redefining roles, responsibilities and expectations. It is through these and other actions that designers can transform power, in many small steps over an extended period. It is only in hindsight that societal change can become tangible, as the result of many small transformations

10.3 Literature Contributions

This dissertation makes a number of contributions to various bodies of academic literature. This section distinguishes primary contributions, which pertain to the overarching aim of the dissertation, and secondary contributions which pertain to individual papers and their situation in academic literature.

Primary contributions

Firstly, this dissertation contributes to general calls in *design research literature* to foster new approaches that are fit for *transitions, polycrisis and plurality*. It responds to calls to:

- go beyond traditional problem-solving methods (Henig & Knight, 2023; Lawrence et al., 2024);
- avoid universalist frameworks (Akama et al., 2019; Escobar, 2018; Lake et al., 2022);
- harness design's capacity political agency (Yelavich & Adams, 2014);
- prioritize plural, shared, and collective societal interests (Ehn et al., 2014);
- address complex societal challenges with interconnected environmental, technological, sociocultural, economic and political factors (Irwin et al., 2015);
- more clearly articulate the value of design in the public sector (Van Der Bijl-Brouwer, 2016);
- address transitions in a local and integrated manner (Kossoff, 2015)
- provide an approach to "link existing solutions so that they become steps in a larger transition vision" (Irwin et al., 2015, p. 4).

Secondly, this dissertation contributes to calls in *design research literature* to better understand *power issues* in design. It responds to calls to:

- reflect on the political implications of participation in design (De Rosa et al., 2023; Gaziulusoy & Ryan, 2017);
- foster more concepts to address issues of power in design (Tomasini Giannini & Mulder, 2022);
- address power dynamics that are implicit in building relationships (Udoewa & Gress, 2023);
- deal with frictions, disagreements and value conflicts (Jones, 2014; Van Der Bijl-Brouwer et al., 2024);
- provide a more nuanced perspective on the role of power, contestation and politics in transition design (White, 2015).

Thirdly, this dissertation contributes to calls in *energy research, transition studies and public management studies* to better understand issues of *power*. Most notably, it provides a framework to understand power relations beyond

the distinction of power-to, power-with and power-over (Avelino et al., 2023). In addition, this research responds to calls to:

- better understand the relationship between micro-level politics and macro-scale changes (Avelino et al., 2016, 2024; Köhler et al., 2019);
- investigate asymmetric power relations between people and institutions (Lewis et al., 2020);
- understand micro-politics in transitions and public management (Avelino et al., 2016; Van Buuren et al., 2020);
- bring more focus to social relations in energy transitions (Hargreaves & Middlemiss, 2020; Middlemiss et al., 2024);
- go beyond individualistic, materialistic and entrepreneurial focus in energy studies (Damgaard et al., 2022; Kluskens et al., 2025; Lennon et al., 2020; Wahlund & Palm, 2022);
- foster action-oriented approaches (de Geus et al., 2023) with reflexivity as a core practice (Christley et al., 2025; Devine-Wright & Ryder, 2024);
- understand public participation through a lens of power relations (Arnstein, 1969; Chilvers & Longhurst, 2016)

Fourthly, this dissertation contributes to literature on *design anthropology*. The main contribution consists in, as is described in chapter 6, adding an element of *transformative action* to design anthropology, which hitherto has mostly operated at the epistemic level in controlled or curated environments (Kaviani et al., 2023; Mazé, 2016; Otto & Smith, 2013; Pink et al., 2020; Singh, 2019). By bringing design anthropology into conversation with ontological design, I draw attention to the manner in which designer anthropologists intervene in the emergence of shared futures. In this way, design anthropology is positioned as a 'style of acting' rather than a 'style of knowing' (Kilbourn, 2013; Otto & Smith, 2013). This understanding can also be seen as what Gatt & Ingold call the next twist of the reflexive turn: "the anthropologist's deliberate and reflexive participation in the production of artefacts" (Gatt & Ingold, 2013, p. 154). Finally, it is a response to the need for anthropologists to become active participants in practices of worldmaking, and focus on emergent futures rather than the past and present (Salazar et al., 2017).

Secondary contributions

This dissertation makes the following secondary contributions:

- Chapter 4 contributes to the community of *ethnographers* working in *organizational contexts*, by interpreting challenges and implications for ethnographers working in an energy transition context.
- Chapter 5 contributes to literature on *design ethics*, responding to the call to consider design ethics as an invitation to care (Ozkaramanli et al., 2022) by positioning design ethics as situated in, and internal to, the design process, in a relational and emergent manner.
- Chapter 6 contributes to *energy studies* by positioning seven emerging energy worlds as the starting point for design fictions for human-centered energy transitions.
- Chapter 7 makes contributions to emerging scholarship on *future making*, and responds to authors who describe the need to move beyond foresight, speculation, and strategization (Comi & Whyte, 2018; Pettit et al., 2023; Whyte et al., 2022) who foreground practice-based approaches (Thompson & Byrne, 2022; Wenzel et al., 2025), and who consider how future making is situated in modes of collective inquiry and deliberation (Comi et al., 2025).

10.4 Limitations and Directions for Future Research

Besides these contributions, this study also has important limitations, which I reflect on here. Notably, this research was intentionally configured to acknowledge and embrace ambiguity, situatedness, and uncertainty. Whilst I have provided reasons and justifications for this, it also provides important constraints. First of all, projects with different setups, aims, and configurations might yield different findings and results, which may or may not align with the findings of this dissertation. Along the same line of reasoning, researchers who have different disciplinary orientations, personalities, or cultural backgrounds might likewise identify different issues than I have. Furthermore, whilst the situatedness of the approach adopted in this study is suited for novelty, creativity, cross-disciplinarity, and a prioritization of societal impact, some might prefer frameworks or methods that are more narrow and specific, and that emphasize conceptual systematicity over narrative richness. These distinct approaches are complementary and not adverse. Whilst this study has been productive in generating conceptual insight through particular findings and

experiences, its findings are – in keeping with the ambitions and limitations of abductive reasoning – hypotheses. Such hypotheses can be further investigated in inductive and deductive study, and this would indeed be a fruitful direction for future research. Besides this, the nexus between design, power and transitions is extensive, and whilst chapter 2 has described several conceptual horizons for this intersection, more work can be done to explore these horizons. The same goes for the framework positioned in chapter 8: this framework should be regarded as only an initial idea, which requires further empirical and theoretical work.

There are other limitations for the approach outlined in this dissertation. With the focus on building relations and collaborations, it is less useful in situations where there is already an established social collective, team or community – rather, it is appropriate for contexts where this collective of stakeholders has not yet been assembled, and is iteratively constructed. Furthermore, because of its openness and focus on contestation, the approach is not suitable for achieving particular pre-determined desirable outcomes in a controlled fashion. Also, with its focus on politicization and contestation, this approach may inevitably result in conflict and disagreement between actors. Whilst I consider this an advantage and often necessary step, it might not be suitable in all cases.

There are several fruitful directions for future research. Whilst this dissertation has focused on agency, and on positioning design anthropology as a ‘style of acting’, there might be a generative convergence with the concept of ‘making’, which has already been of interest to design anthropologists (Ingold, 2013). In the domain of energy studies, much more work can be done to apply the framework on social relations from chapter 8 to a diversity of domains – including energy communities, energy citizenship, energy platforms, smart local energy systems and more (Boekelo & Kloppenburg, 2023; Ford et al., 2021; Hanke et al., 2021; Wahlund & Palm, 2022). In the domain of transition studies, the framework of power relations from Chapter 8 can be fruitfully investigated in relation to previous work on power and politics (Avelino et al., 2024; Avelino & Rotmans, 2009; Geels, 2014; Grin et al., 2011; Köhler et al., 2019).

Finally, an important aspect which is related to power, which this dissertation has only touched upon superficially, is the legitimacy of power. In other words: what are the mechanisms, reasoning, and practices, by which power comes to be recognized as legitimate, in contexts of design and

transitions. As mentioned – particularly in chapter 5 – the legitimacy of our own exercise of power consisted in the fact that we were supporting the interests of local residents in Venserpolder, and in particular, the emergence of a local energy community. For future studies that explore the interrelation between power and design, I suggest that processes of legitimizing and delegitimizing should be a key interest. This will further bring focus to ethical and moral values in design, including justice.

10.5 Reflection

Given the prioritization of both reflexivity and societal interests in this study, it is informative to reflect on this aspect of the work. During especially the 2nd and 3rd year of the PhD, I invested much time and effort on supporting the initiative to establish a local energy cooperative in Venserpolder. While I was not yet familiar with the workings of such an organization, there were no other partners in the project who did have this expertise, and hence, it fell upon me to obtain the necessary knowledge and information and coordinate these efforts. This required a significant energy investment during this time, and whilst it did contribute to our research interests, it was primarily motivated by the sense that we must provide some sort of value to the Venserpolder neighborhood. In turn, this sense was prompted by the initial experiences outlined in Chapters 3 and 4, where local residents said that local participatory and research projects should result in favorable outcomes for the community. Much can be said about the tensions and frustrations which arose in this process, and here I will plainly, freely and extensively speak my mind about these.

In the beginning, we had the aim to gain an ‘insider’ perspective into the neighborhood, by becoming acquainted with key interlocutors and community leaders, and slowly building trust. In this way, this ethnographic approach was informed by the aim to build human-to-human connections. As I quickly found out, however, the local residents did not perceive us as merely ‘persons’, but as institutional representatives. Hence, our presence and aim of building relationships were not regarded as human-to-human relations, but human-to-institution relations. This was a key turning point which prompted the prioritization of power as a key interest. Neither ethnography nor any other resources which I have been able to find, have satisfactorily addressed this institution of human-to-institution relations as it pertains to academic research

and impact creation. Of course, this is an intrinsically asymmetric power relationship which citizens are well aware of, but the university is oblivious to: its institutional machinations are simply geared towards 'producing knowledge' – i.e., churning out papers and gathering data – in a mechanistic manner. To the extent that we, as academic staff, are insufficiently reflexive and aware of this process, we are part of its machinery and propagate its influence, willingly or unwillingly.

In organizing the process of co-creation with Venserpolder, the tension between 'obtaining data for research purposes' and 'catering to the needs of residents' remained significant. In particular, when organizing workshops with local residents, there was a distinct desire from the academic team that I mobilize specific design techniques and ask the residents their views about topics of our interest – e.g., how do they perceive issues of power. Whilst several attempts were made here, they were largely unsuccessful, for several reasons. I believe these are important take-aways for any designers and researchers who wish to work with communities or vulnerable groups.

- The co-creation sessions were often rather ad-hoc and improvisatory in nature, where aspects like the location, and in particular the list of attendees, were changed at the last minute. This made it difficult to plan these sessions in a more structured way.
- Time was often limited, as we only had 2 hours for each session, which include a collective check-in moment and casual chat and dinner. For obvious reasons, priority was always given to listen to the concerns which residents themselves brought to the group. Therefore, there was at most 1 hour for any co-creative exercises which we wished to do, which proved to be too little.
- An important aspect of any academic design tool or technique, is that it must be replicable to other contexts, so that it can address issues of broader relevance. To do so, they necessarily operate at a higher level of abstraction. In our gatherings with the residents, I repeatedly found that attempting to discuss issues at a higher level of abstraction was disruptive, counterproductive and confusing. This was the case because such abstraction would simplify and generalize the local complexities and lived experiences too much, so that they would lose relevance.

- Concerning the above point, the same may be said of our attempts to discuss aspects of our academic interests, such as ‘power’ or ‘exchanges’. These were too abstract to bear any relevance to the local context and the residents’ lived experiences. Of course, as I have written in chapter 2, there is an issue of power implicit in this abstraction.
- Most importantly perhaps, there was a distinct difference in attitude between me – as an academic knowledge worker who, despite best intentions, is also experiencing a sense of urgency prompted by the PhD process and the need to provide results and deliverables – and the residents, who most of all see the co-creation sessions as a nice get-together which gives the opportunity to get to know one’s neighbors, and discuss prevalent issues in the neighborhood. As a visitor, it felt inappropriate to bring my academic ‘ways of working’ to this community.

Concerning the above points, I have no doubt that these are well known to experienced anthropologists or action-researchers who have a record of doing community work. However, in my experience and perception, there are many researchers and students in cross-disciplinary social research fields – including design and energy studies, but also beyond – who not only have no awareness of these important aspects, but more importantly have no training in it. For myself, none of my academic studies or courses – including those in my PhD – have prepared me for this. In fact, I have found my immersion in the academic environment to be actively detrimental at times, as it reinforces an ivory-tower mindset which is counterproductive to building relational competencies required for power work. My role in the LIFE project required me to combine conducting academic research, power work and being an expert on energy cooperatives. While I have attempted to do the best I can, I reflect that I was not trained for it – specialized people for the latter two aspects would certainly have done a better job. I certainly am a better researcher than I am a social worker, and whilst I enjoyed learning about the technical, organizational and economic specificities of energy cooperatives, much time and resources could have been saved by involving someone who already has this knowledge.

Speaking my mind plainly: I feel that there is a lack of awareness in academia about competencies in building inter-human and inter-organizational

collaborations which exceed the scope of 'writing a paper' or 'applying for a grant', and in particular, the issues of power implicit in them. There is simply no time for such things - the institution does not incentivize learning them, and in fact, it actively discourages questioning them: it promotes conformity to academic convention above all else. If the creation of societal impact is to be taken seriously, there must be a shift in priority, strategy, and allocation of resources towards developing these competencies. Otherwise, these efforts are wasteful of public resources at best, and actively harmful at worst, as public trust in these institutions can erode further.

These issues above are not simply contained to the university, however. Throughout this research I have become disappointed with the role of the municipality. Consider the following aspects of the initial setup of the LIFE project:

- Through the EnergieLab Zuidoost, the municipality was a key partner in the setup of the LIFE project.
- The key goal of the LIFE project was to develop a 'smart ICT platform' which would provide highly innovative energy services, such as energy trading and asset sharing.
- Another key goal was to make this platform 'socially inclusive'.
- The key designated context for this was Venserpolder, a challenging neighbourhood where people reported to already deal with participation fatigue.
- There were no residents involved in the setup of this project: its goals had already been determined, before any effort was made to involve them.

Consider then, the role of the municipality as it unfolded throughout the project:

- The municipality was not directly represented within the project consortium, besides an externally hired consultant who took care of project administration. This consultant, whilst they were a pleasant colleague and doing well for the work they were hired, had limited knowledge of the municipality's aims, interests and internal organization.

- The municipal department which was represented in our project was concerned with infrastructure and built environment, and hence responsible for the issue of grid congestion, but not at all with social inclusion.
- Many requests towards this municipal department to talk about the issues of social inclusion, energy poverty or related issues, were diverted as this was not their concern.

I do not believe that an honest appreciation of these facts are evident of anything else than naivety, or simple disregard for the social issues at hand, in setting up the project. I speculate that the municipality required urgent solutions to the issue of grid congestion, and that the grant required them to make a statement about the social benefits of such solutions.

So then the question arises: what did we really achieve? Thanks to Stichting Co-Force, residents could receive an hourly financial compensation for their involvement in the co-creation sessions. This was a crucial attempt to 'level the playing field' between the experts and the residents, as it is founded on an acknowledgement of residents as local experts. It ensured that, even if the project would not result in useful outcomes, residents' time investment is respected and compensated. After all, we as experts are compensated for our time, energy and effort investment, regardless of the final result: why would the residents not be? At the same time, I reflect that there is a risk that it results in a new power relationship and dependency: if the residents are being paid, there is the temptation to push for certain outputs and results to be delivered, or to require a certain level of contribution and involvement. To what extent is it appropriate to do so, if the goal is to be genuinely co-creative? This issue is a can of worms, to which we have not found an answer, but which must certainly be addressed in future endeavors to organize co-creative projects in this way. For universities and other large institutions, it would be best to work with locally trusted organizations and community leaders who know how to deal with such sensitivities.

If financial compensation is not provided, then co-creation must rely on the intrinsic motivation of residents. Already, it appears that most successful energy cooperatives work in this way: they rely on a single, or select few, individuals who have excess time on their hands, are leaders of their local community, have intrinsic motivation and interest in the topic of energy and

sustainability, can grasp the technical complexity, and know how to navigate the institutional landscape – e.g. by having informal ties, contacts and network within their municipality. A typical profile of this person, is the healthy and active (male, Dutch) pensioner who has had a career in energy, business or local government. It might be tempting to think that it is naïve to expect that energy communities can also form in neighborhoods like Venserpolder, but here I disagree. Over the course of the four years, I have found that there are many active and committed community members who want to contribute to the community. Given that they lack the specific expertise and experience required, however, many do not regard themselves as sufficiently empowered to take up a project of this complexity.

At the end of the project, the Energy Cooperative Venserpolder was established – the organization exists, supported by a pioneer group of 9 residents. In some ways, this can be regarded as a successful outcome for the project: it was as much as we could have hoped for. Still, I reflect that perhaps we were not successful enough. Establishing the organization is only the first step – it is still a long way before any meaningful energy projects are successfully developed, and before any progress is made towards mitigating local socio-economic issues. Given that the project is over, and that there are no further time and resources available to dedicate to this effort, its future is uncertain. It must be said that, in the ending phase of the project when the Energy Cooperative Venserpolder was gaining traction, the municipality offered to provide financial support. Importantly, however – and this is a key issue – this support would be available for me and my colleague from Co-Force who had been leading the project, but not for the residents themselves. Given that this would reinforce power asymmetries, that control over the project would reside not with residents but external experts and the municipality, and that it would be a step back from the setup of the LIFE project, we refused this offer. Whilst accepting the offer would have contributed to developing local energy assets in the neighborhood, it would not have contributed to inclusion, empowerment and social capital building of the residents, which was the goal after all. This is a structural deficiency in the available funding for energy cooperatives: subsidies may be used for hiring external consultants, but not for compensating board members – i.e. the local residents who invest time, energy and effort into the project.

One might say that we could have known this from the beginning, and hence, we should have never started the initiative. There are multiple reasons, however, why I believe it was the right decision to make the attempt.

During the energy crisis in 2021 and 2022, the energy prices were incredibly high. Not only did this result in high priority to address issues of energy poverty, but energy cooperatives around the country were making a significant turnover from their solar energy installations. Given the availability of space on rooftops in Venserpolder, filling them up with solar panels seemed like a no-brainer, and a direct pathway to addressing energy poverty. Unfortunately the energy prices have dropped significantly ever since, and the business case for collective rooftop PV has gotten significantly worse, as the energy market has become oversaturated with solar energy. Collective PV projects are struggling to become financially viable throughout the country. This development, which we did not foresee, has made the effort to establish a local energy community considerably less interesting. This development does mean that experimentation with 'smart energy solutions' is becoming more and more important, but this is better done in communities which already have basic social and technological infrastructure setup.

At the same time, the existence of the energy cooperative Venserpolder as an organizational entity can provide opportunities for the future. If new social or technological innovations become available, if the energy prices rise again, if the legal landscape changes, or if local energy transition developments again require the involvement of residents, then the organization already exists, and can be used towards such purposes. At the present moment, the time may not be right for it to flourish, but after some years of latency, its time might come.

Another reason is that, in the beginning of the project, there were potential opportunities to obtain support from the Johan Cruijff ArenA and other large asset owners in the area, for Venserpolder. Early statements from their side suggested as much, but as we came to concrete 'negotiations' of what this could look like, there were too many practical and legal hurdles to make it happen.

Finally, even if the energy cooperative Venserpolder does not proceed with further activities in the local energy transition, we believe that value has been created. As described in chapter 7, the power transformations achieved should be regarded in a highly local and specific manner. Over the course of the project, relations were formed, mutual understanding was created, knowledge

was shared, and interests were piqued. This happened both within the neighborhood, as local residents have come to know each other, and between the neighborhood and external institutions, including the municipality. Hence, seeds were planted that might grow into desirable futures. It is in this way that the value of transition-design-as-power-work also consists in the building of relations and collaborations, which can contribute to long-term transformative pathways, but whose impact generally goes under the radar. It is here that the suggestion of a municipal representative, quoted in chapter 7, to invest in community building for 5 years before doing anything else, becomes relevant. I do in fact believe that this would be the right thing to do: resilient communities are the backbone for any further local work to take place, if it is to create value substantively.

As a closing reflection, I will make a suggestion for a key power issue that has been central throughout this dissertation: the relationship between local communities and institutions. I argue that a fundamental reframing of this relationship is required if societal transitions are to be enacted in a human-centred, inclusive, and democratically legitimate manner. It is evident that institutional agendas for long-term societal change do not speak to the lived experiences of many people. It is furthermore clear that treating people as mere data resources is simultaneously unethical, counterproductive and extractive. Finally, it is also evident that local communities are best supported by strengthening their local economy and social capital, and embedding this in peoples local social and cultural lives and practices. I suggest that there is an opportunity for novel partnerships between local communities and universities that can address all of these challenges simultaneously. Local community members can be provided opportunities to be employed as co-researchers, who help academics with understanding the local context and its particular social and cultural conditions. These community members are afforded opportunities for professional development, can act as ambassadors on behalf of the academic institution, and can help to triangulate academic findings from a local perspective. They can act as action researchers that work to strengthen local networks and collaborations between residents, community leaders and outsiders. I argue that this role is necessary, as academics are never able to adopt the 'insider' role - their embeddedness in institutional systems prevents this. Rather than becoming an insider, I argue that communities are best engaged and understood through establishing proper relationships, where a local

community member can act as a mediator, whilst being afforded the same status and compensation as an academic researcher. Not only will this result in higher quality research, it is the only possible way that academic research can lead to sustained value creation and impact for local communities. I argue that such a setup would be a necessary precondition for any research and design work which aims to provide value to marginalized communities.

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Publications part of this thesis

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- Van Leeuwen, G., Singh, A., Van Eekelen, B.F., Keyson, D.V. (Manuscript under review). Design, Power and Societal Transitions: A Sensitizing Framework. *Designing*.
- Van Leeuwen, G., Singh, A., Van Eekelen, B.F., Keyson, D.V. (Manuscript under review). Design Anthropology for Transforming Power Relations in Societal Transitions. *Public Management Review*.
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- Van Leeuwen, G., & Singh, A. (2023). Local Frictions in the Energy Transition: Design Anthropology for the Emergence of Energy Communities. *EPIC Proceedings*, 277-294.

Workshops and presentations

- Van Leeuwen, G., Singh, A. (2025, March 27). *Mapping Future Pathways for Local Energy Collectives* [Workshop]. EnergieLab Zuidoost Seminar 2025, Amsterdam, The Netherlands
- Van Leeuwen, G. (2025, April 8). *Design Anthropology for Transforming Power Relations in Societal Transitions* [Conference presentation]. IRSPM 2025 Conference, Bologna, Italy.
- Van Leeuwen, G., Methorst, W. (2025, March 4). *Collectieve deelname aan het lokale energiesysteem* [Conference presentation]. LIFE Final Conference, Amsterdam, The Netherlands.

- Van Leeuwen, G. (2025, February 6). *EnergieLab Zuidoost Lunch Lecture* [Lecture]. EnergieLab Zuidoost, Amsterdam, The Netherlands
- Van Leeuwen, G., & Singh, A. (2024, October 23). *Voicing The Underrepresented Voices of Bijlmer's Energy Transition* [Presentation]. Dutch Design Week 2024, Eindhoven, The Netherlands
- Van Leeuwen, G., & Singh, A. (2024, June 27). *Design anthropology for ethics of care and emergence: Reflections from an energy transition project* [Conference presentation]. Design Research Society Conference 2024, Boston, MA, United States.
- Van Leeuwen, G., Zomerdijk, W., Trip, S., Poolman, H.R., Methorst, W., Singh, A., & Brummelkamp, L. (2024, March 28). *Future Energy Scenario Analysis* [Poster]. EnergieLab Zuidoost Seminar 2024
- Van Leeuwen, G., & Singh, A. (2024, April 23). *Design Anthropological Exploration of Future Energy Scenarios for Amsterdam South-East* [Conference workshop]. AMS Conference - Reinventing the City 2024, Amsterdam, The Netherlands
- Van Leeuwen, G. (2023, November 14). *Designing Smart Energy Systems for a Disadvantaged Neighborhood* [Symposium presentation]. Urban Energy Institute Symposium, Delft, The Netherlands.
- Van Leeuwen, G., & Singh, A. (2023, October 23). *Local Frictions in the Energy Transition: Design Anthropology for the Emergence of Energy Communities* [Conference presentation]. Ethnographic Praxis In Industry Conference 2023, Chicago, IL, United States.
- Van Leeuwen, G. (2023, September 28). *Probing Energopolitical Forces in Smart Energy Infrastructure Development: A Design Anthropology Approach in Amsterdam South-East* [Conference presentation]. Beyond crisis/Beyond normal conference 2023, Trondheim, Norway.
- Van Leeuwen, G. (2023, March 29). *The LIFE project: Value creation and distribution in the quadruple helix* [Workshop]. EnergieLab Zuidoost Seminar 2023, Amsterdam, The Netherlands.
- Van Leeuwen, G. (2022, October 17). *Transformative power for human-centered local energy systems: A design anthropology approach in Amsterdam Southeast* [Conference presentation]. SNIPPET 2022, Chania, Greece.

Curriculum Vitae

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Work experience and education

Nov. '21 – present	Delft University of Technology, Department of Human-Centered Design PhD Candidate As a PhD Candidate I have been part of the Local Inclusive Future Energy (LIFE) project. This project was situated in Amsterdam Southeast and aimed to address joint social and technical challenges in the local energy transition. In this position I have undertaken numerous activities as part of longitudinal and transdisciplinary design anthropology research. These activities served the dual aim of societal impact and academic knowledge creation.
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Sep. '06 – Jun. '12	Stedelijk Gymnasium Apeldoorn VWO, N&T en N&G profile



This series of images, which progresses from the front cover to the final chapter, represent the PhD process. At the beginning, a murky, confused situation is encountered – one cannot discern, what is actually going on. Step-by-step the situation is clarified, and by the end a clear picture emerges. Yet, the result is not without dynamism or threat; a clear picture of power dynamics does not yet make a peaceful situation.

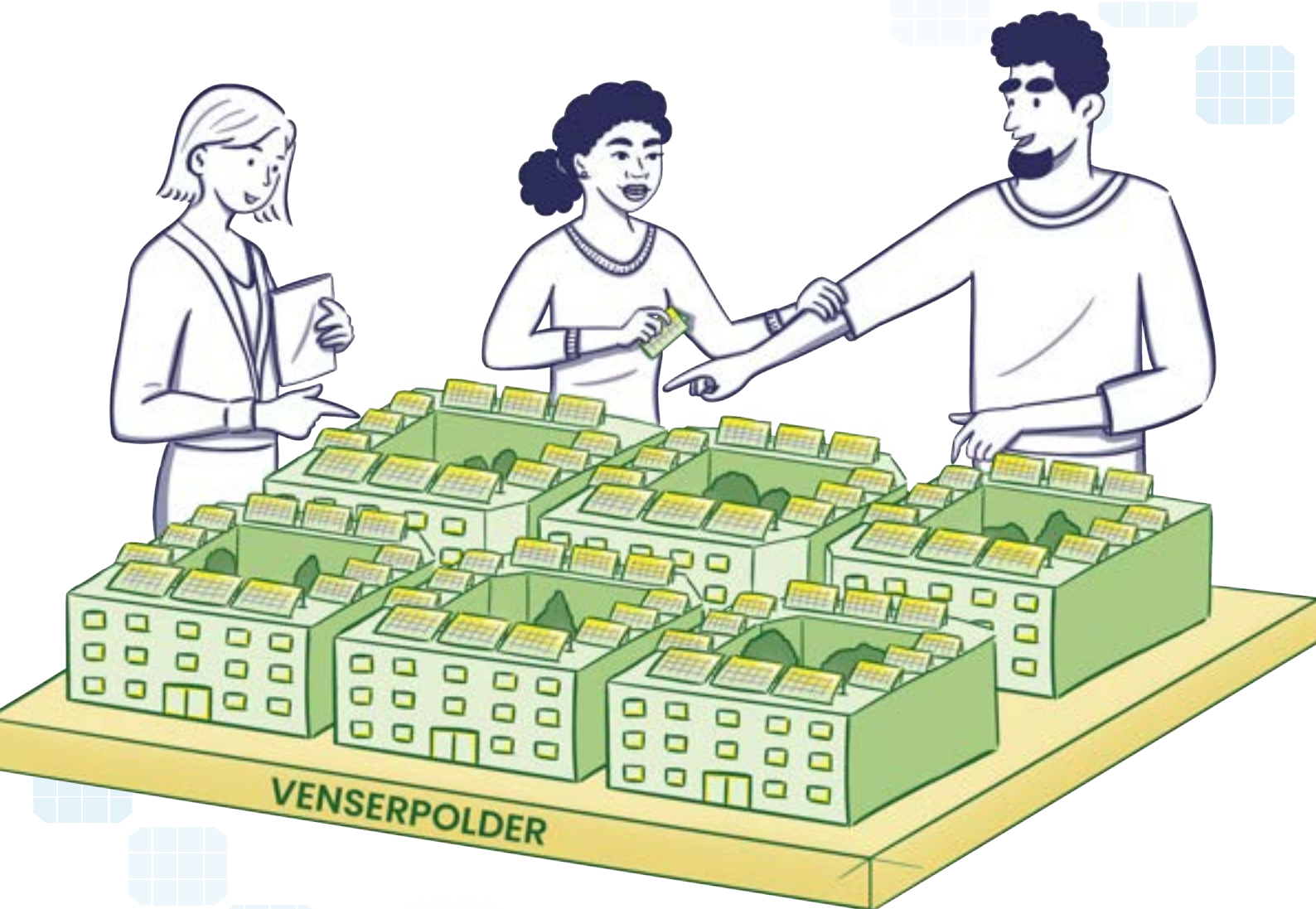
Design by Paul van Sommeren

BUILDING A SUSTAINABLE FUTURE TOGETHER

Co-creating the local energy transition in Venserpolder

Gijs van Leeuwen

Abhigyan Singh



Building a sustainable future together: Co-creating the local energy transition in Venserpolder

In references, please refer to this publication as follows:

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This booklet was created based on the insights gained from design anthropological research as part of the Local Inclusive Future Energy (LIFE) City Platform project, which was funded by the Missiegedreven Onderzoek, Ontwikkeling en Innovatie (MOOI) subsidy program from the Netherlands Enterprise Agency (RVO). The RVO is part of the Dutch Ministry of Economic Affairs.

Contributions

Gijs van Leeuwen (TU Delft)

Writing – original draft, conceptualization, investigation

Abhigyan Singh (TU Delft)

Writing – review & editing, conceptualization, investigation, supervision

Lina Li (TU Delft)

Visualization, conceptualization

Wouter Methorst (CoForce)

Conceptualization, writing – review & editing

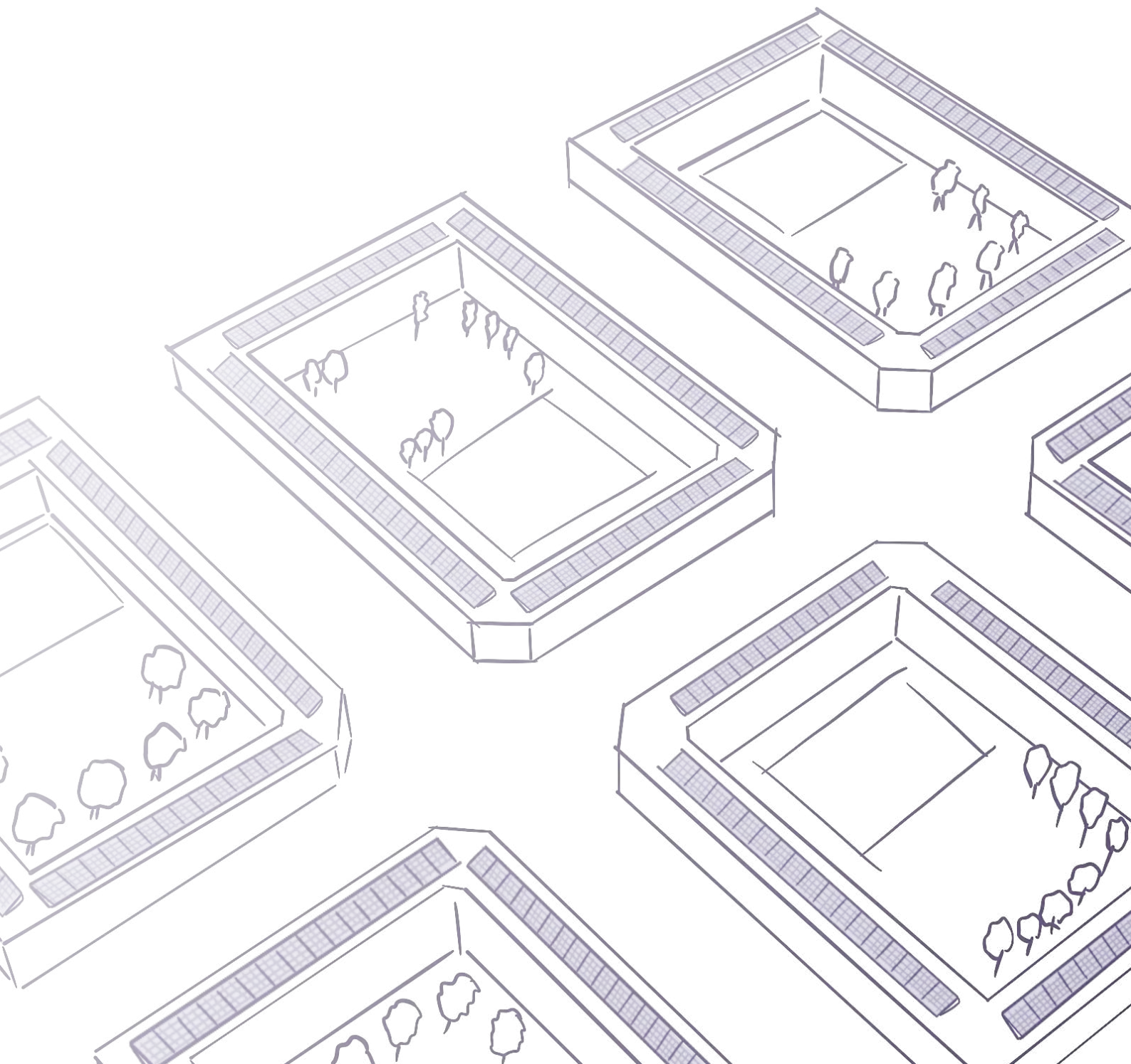
Ayushi Acharya (TU Delft)

Visualization



BUILDING A SUSTAINABLE FUTURE TOGETHER

Co-creating the local energy transition in Venserpolder



This booklet describes the outcomes of four years of research and co-creation in the Venserpolder neighborhood. This research was done as part of the **Local Inclusive Future Energy (LIFE) project**. The LIFE project ran from 2021 to 2025 and was a collaboration between research institutions, the municipality of Amsterdam, companies, and local stakeholders in Amsterdam Southeast.

The project had two goals: first, to develop smart solutions to reduce the congestion in the electricity grid. Second, to explore how such solutions can reduce energy poverty in Amsterdam Southeast. From this second goal, the initiative emerged to establish an **energy community** in Venserpolder.

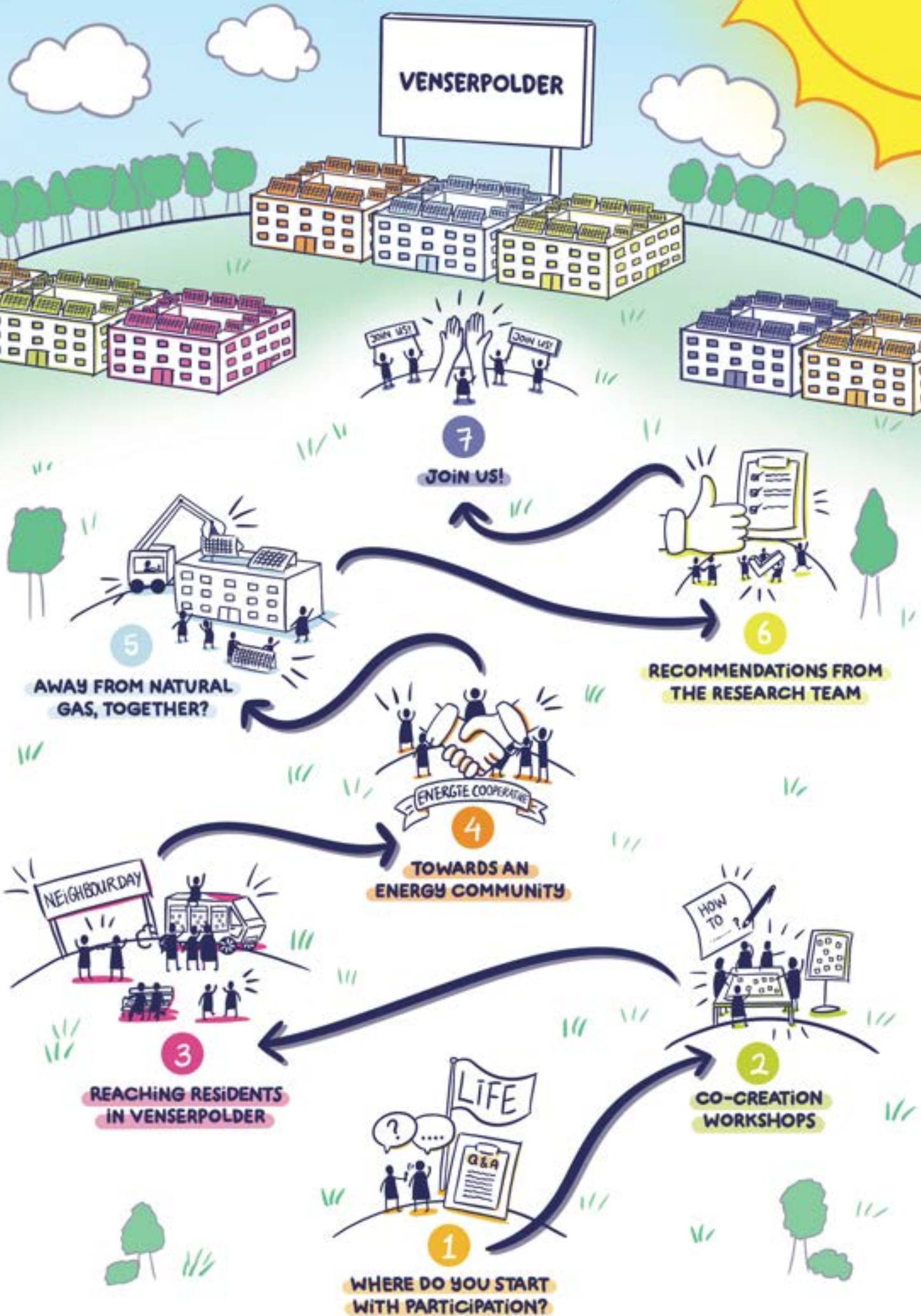
This booklet describes how residents, researchers, and local actors collaborated as much as possible. We describe the **co-creation activities** and the common responses and concerns of residents. Additionally, the booklet provides information on what an energy community is, how it functions and how a neighborhood can transition away from natural gas in the future.

First of all, this booklet is intended for residents: to provide information about the research but, more importantly, as an **invitation** to participate. Together, we can ensure a stable and low energy price, energy security, and stronger cooperation within the neighborhood. This booklet may also be of interest to researchers, municipal employees, and other professionals working in the energy transition.



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VENSERPOLDER



Nice to meet you!

My name is Joyce, I live in the neighbourhood for 20 years and am active in local community-building. I believe that sustainable projects should strengthen cooperation within the community and align with the daily lives of the residents.

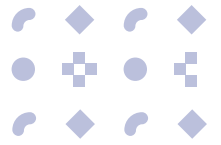


I am Mo, and I moved to the neighbourhood a few years ago. I have a busy job in construction and I don't have much time to focus on energy. My main concern is keeping the energy bill affordable.

I am Petra, a researcher in the LIFE project. I focus on engaging residents in the energy transition.



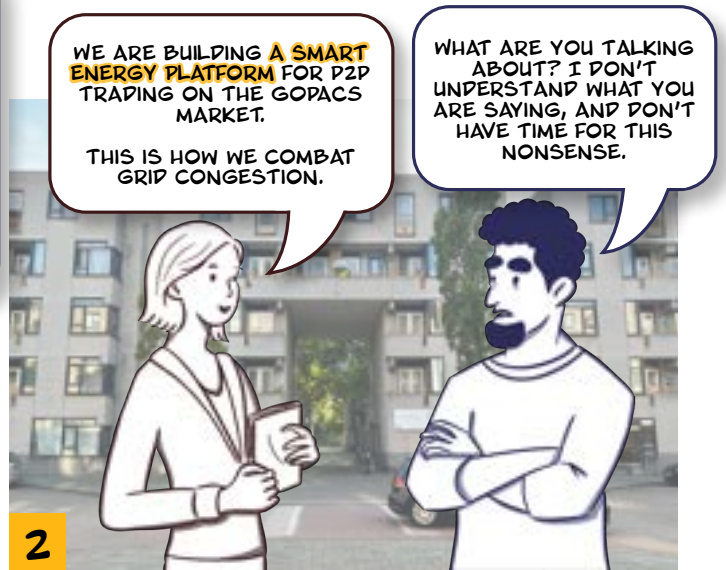
Joyce, Mo and Petra are starting the conversation to explore the possibilities in Venserpolder. The characters and their conversations are fictional, but inspired by findings from the LIFE project. Some reactions and expressions are exaggerated for dramatic effect, to better convey certain tensions.



2022-2023

1. Where do you start with participation?

How does a conversation between residents and visitors emerge? At the beginning of the project, this was a challenge. We visited community centers and approached people on the street. Many people have **"participation fatigue"**, and were not eager to participate in research.



While the LIFE project focused on the smart energy platform, residents were concerned with the renovation of their homes. Cold air coming through window frames was a common issue. The smart energy platform did not initially align with residents' needs, making it challenging to start a collaboration.

In March 2022, an introductory meeting was held with Stichting Co-Force and Stichting !WOON. This meeting included members of sustainability committees from homeowners' associations (VvE's) in Venserpolder.

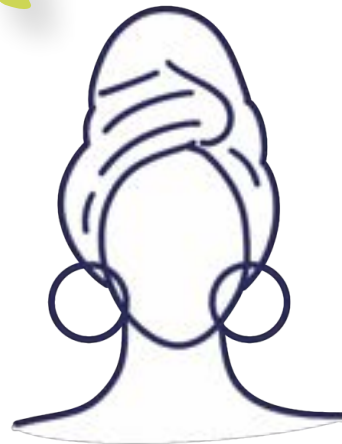
The VvE's play a crucial role in the local energy transition, and their board members work hard to keep the homes livable.

At the beginning of 2022, the war in Ukraine broke out. Energy prices rose sharply, and **energy poverty** suddenly became an urgent issue, including in Venserpolder. In September 2022, we took to the streets to distribute flyers, informing residents about energy coaches – who provide support to those struggling with high energy bills.

"A lot of researchers already come here. What is your research bringing to the neighbourhood?"



"We'd rather not have researchers present here. [this community center] should be a safe environment for residents."



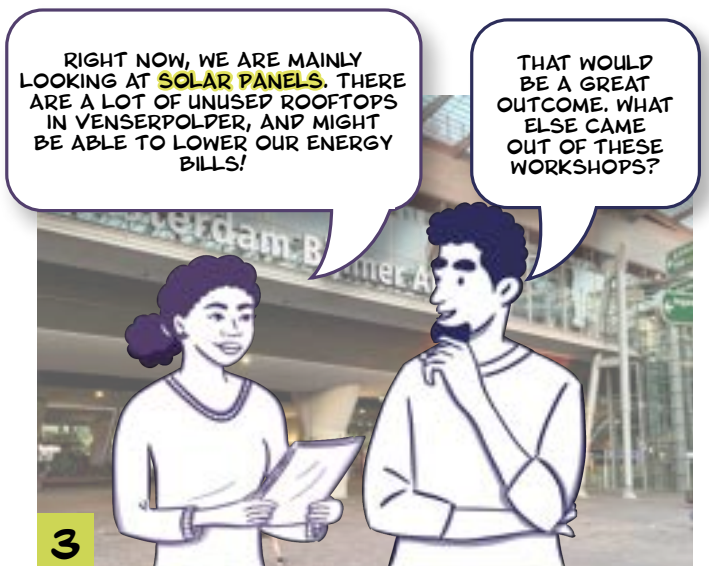
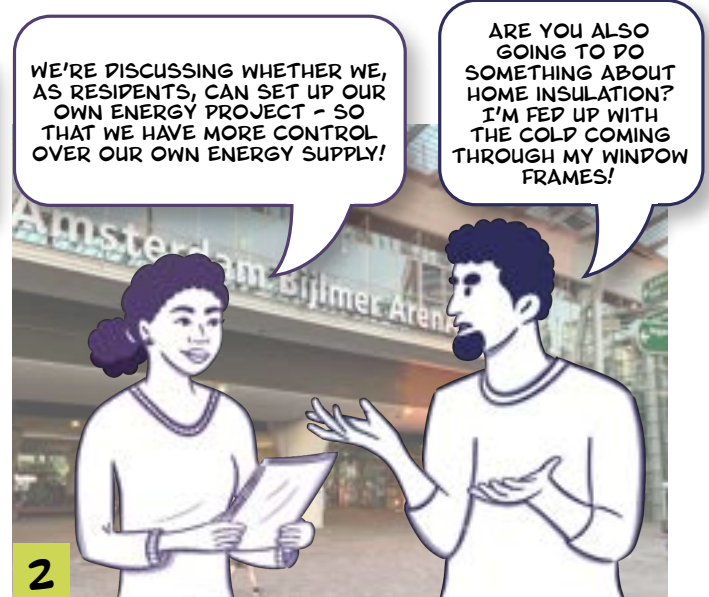
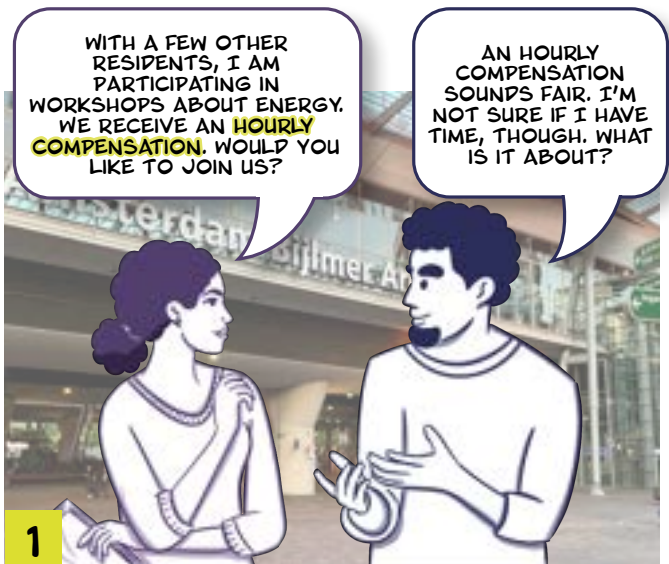
On average, households can save more than 100 euros a month after a visit by an **energy coach**. This is thanks to energy saving measures, such as draft strips, a water-saving showerhead, and radiatorfoil.

**Would you like an energy coach to visit your home?
Scan this QR code!**

July 2023 – January 2024

2. Co-creation workshops

With the first group of interested residents, we organized four co-creation sessions. These sessions focused on the opportunities for a local energy project in Venserpolder: with **control and benefits** for residents. The sessions explored the available options and discussed what is important for the community.



What did the residents find important?

"The goal is to save money, not to end up paying more. If it doesn't lead to lower costs, 90% of the neighborhood will lose interest."

"I believe everyone in Venserpolder should be able to participate."



"[we would like] professional support [for organizing it]. We're not going to do everything ourselves."

"A sense of community. That people know that they are connected to the same energy system."

What were other important outcomes?

01

A local energy project should lower the energy costs for all residents.

02

A local energy project should be organized with democratic participation.

03

A local energy project should strengthen social cohesion.

04

Residents should have the freedom to decide what they do or do not want to organize themselves.

05

A 'step-in model', where a few pioneers start and others join later, should be explored.

06

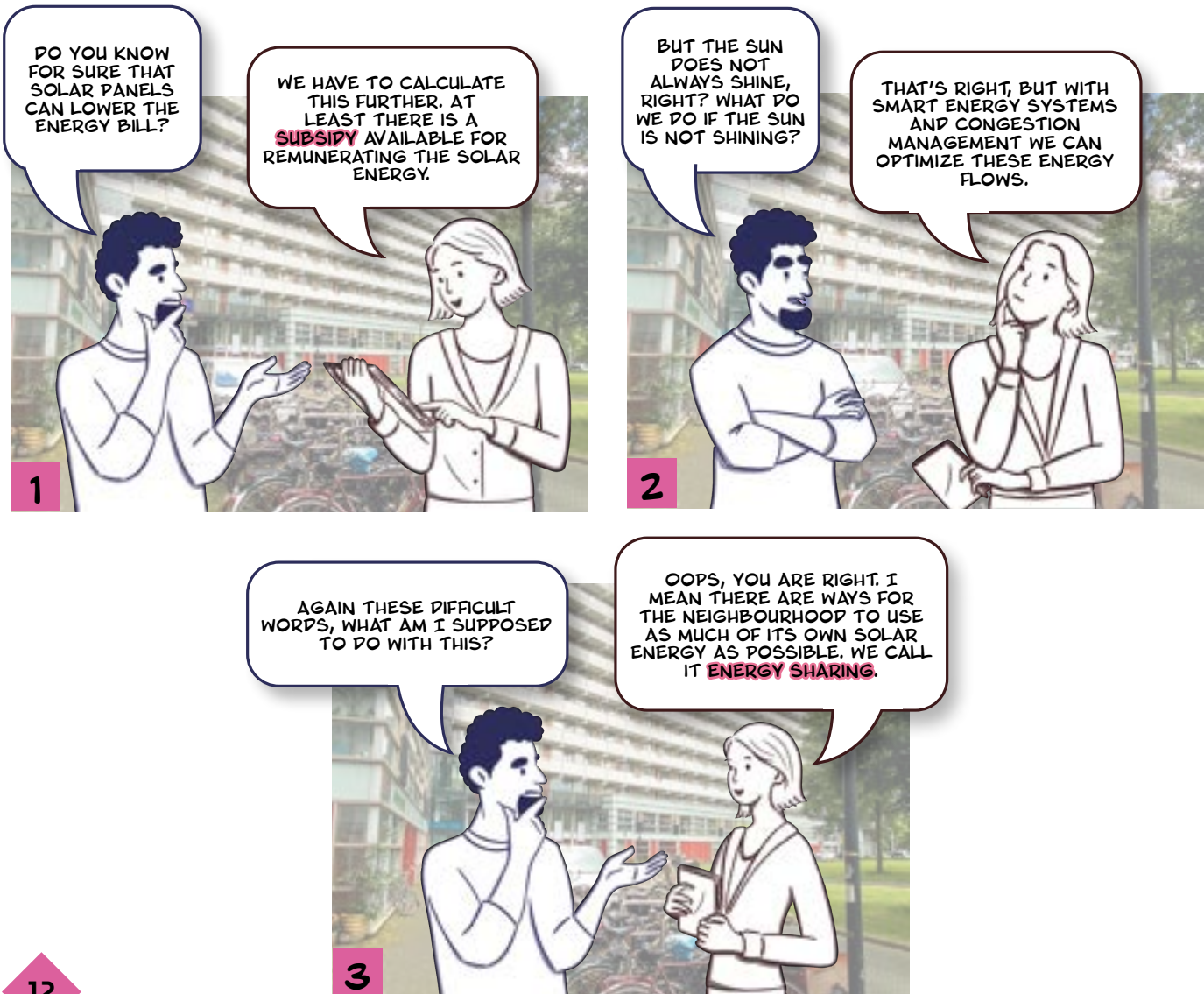
A local energy project could contribute to the stability of the electricity grid.

May - December 2024

3. Reaching residents in Venserpolder

We summarized the outcomes in a flyer and went into the neighborhood to engage a broader group of residents. The focus was on installing solar panels.

The Week van Zuidoost and Burendag Venserpolder were good opportunities to be visible on the street. Afterwards, five more co-creation sessions were organized, where new participants joined each time.



1



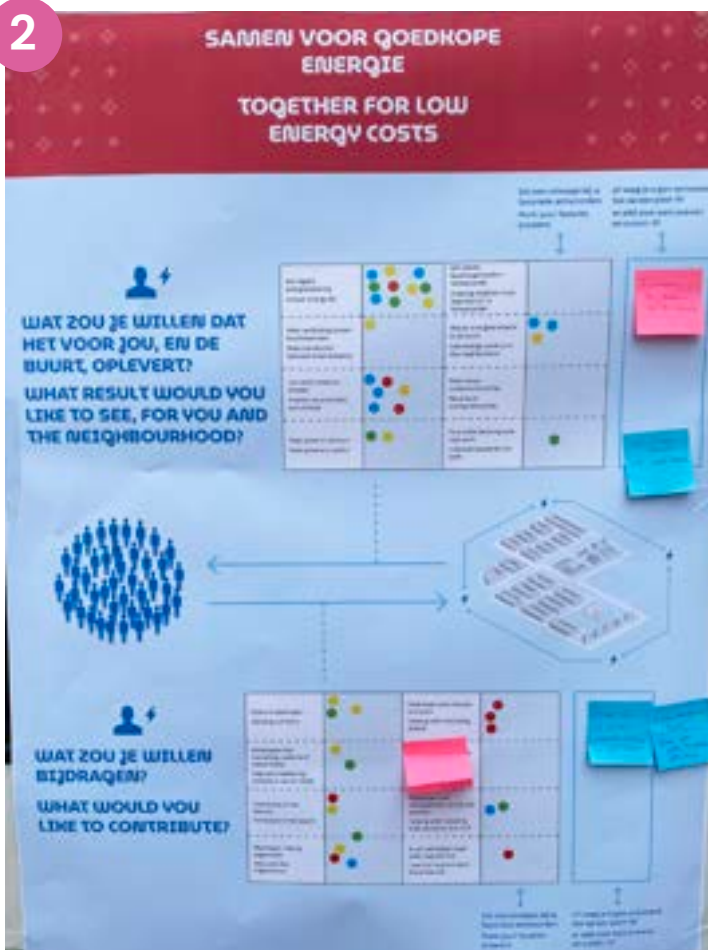
At the Week van Zuidoost, we asked residents to answer a few questions. Here are the results!

The first question was: **With whom would you like to share energy?**

The most common answer was **"vulnerable people in my neighborhood."**

Other popular answers were "my immediate neighbors" and "a local school or community center."

2



The next question for residents was: **"What result would you like to see, for you and the neighborhood?"**

The most common answers were **"a lower energy bill"** and **"a better environment and climate."**

For the question **"What would you like to contribute?"** we received a wide range of responses.

Residents are eager to help by distributing flyers, assisting with organization, managing the website and social media, and engaging the neighborhood.



Finally, we asked residents to place themselves on the **participation ladder** – a way to indicate how closely they would like to be involved in the project.

Half of the residents indicated that they would like to be **actively involved**, for example, by joining a working group or attending monthly meetings.

The other half preferred not to participate actively but would like to **stay informed** through a website or newsletter.



Outdoor gathering during the Week van Zuidoost.

Zonnepanelen zijn nog altijd een voordelige investering

lagere kosten, minder energiekosten

Met lokale energie zit je samen sterk

Steun en duurzaam voor de toekomst

Totale potentie zonnepanelen in Venserpolder = 35 % van het totale elektriciteitsverbruik

Terugverdientijd = 10-15 jaar (zonder subsidie) of 10-12 jaar (met subsidie)

Totale investering voor 1000 zonnepanelen = 10 miljoen euro

100% duurzaam, 100% elektriciteit, 100% voor de toekomst

Met een energiecoöperatie kan je lokaal energie delen

Een energiecoöperatie is een vereniging waar je samen beslissen maakt

Bewoners kunnen gezamenlijk energie afschaffen van de coöperatie

Een gezamenlijke energiebron, voor iedereen beschikbaar en betaalbaar

Door vraag en aanbod van af te stemmen, houden we het elektriciteitsnet flexibel

Als coöperatie kan je samenwerken met bedrijven, zoals de Johan Cruyff Arena

Wie is eigenaar van de zonnepanelen? Drie opties:

A. Individuele huishoudens zijn eigenaar

B. Vereniging Van Eigenaren is eigenaar

C. De energiecoöperatie is eigenaar

Hoe ziet het proces er uit?

4 Co-creatie sessies Florijn

Week van Zuidooit

5 Co-creatie sessies Venserpolder

Koplopergroep van start

Bewonersparticipatie gaat voort

Samenwerking met Johan Cruyff Arena?

Enteke VVE's leggen zonnepanelen?

Oprichting coöperatie?

2023 2024 2025

Poster that was used to inform residents.



The ideas were made tangible with the use of Lego

4. Towards an energy community



A group of residents has joined a **pioneer group**, which met several times in early 2025. Many of the participants are involved in the homeowners' association of their building. The pioneer group is further exploring the option to install solar panels on the rooftops in Venserpolder. The residents of Venserpolder will collectively own these solar panels, ensuring that the benefits stay within the neighborhood.

By working together in the neighbourhood you can form an **energy community**. This is an organization where residents make collective decisions about their local energy supply.

Together, they set goals such as:

- I. Reducing energy poverty
- II. Strengthening social cohesion
- III. Safeguarding the stability of the energy supply

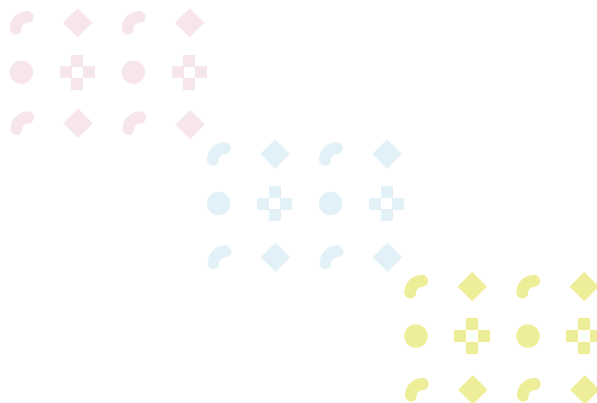
They also decide on strategies to achieve these goals, including:

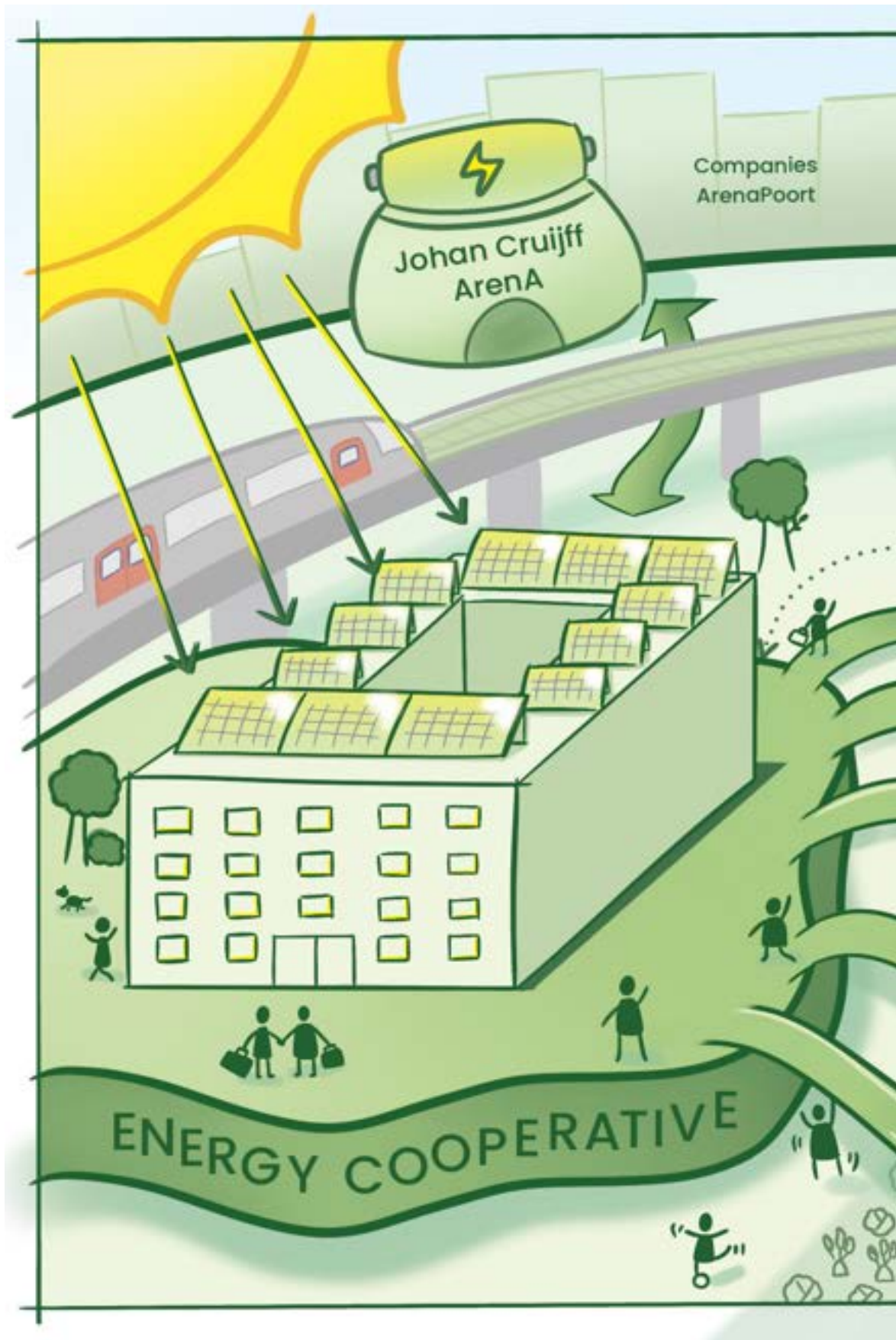
- I. Installing solar panels
- II. Developing a local heating network
- III. Raising awareness about energy saving



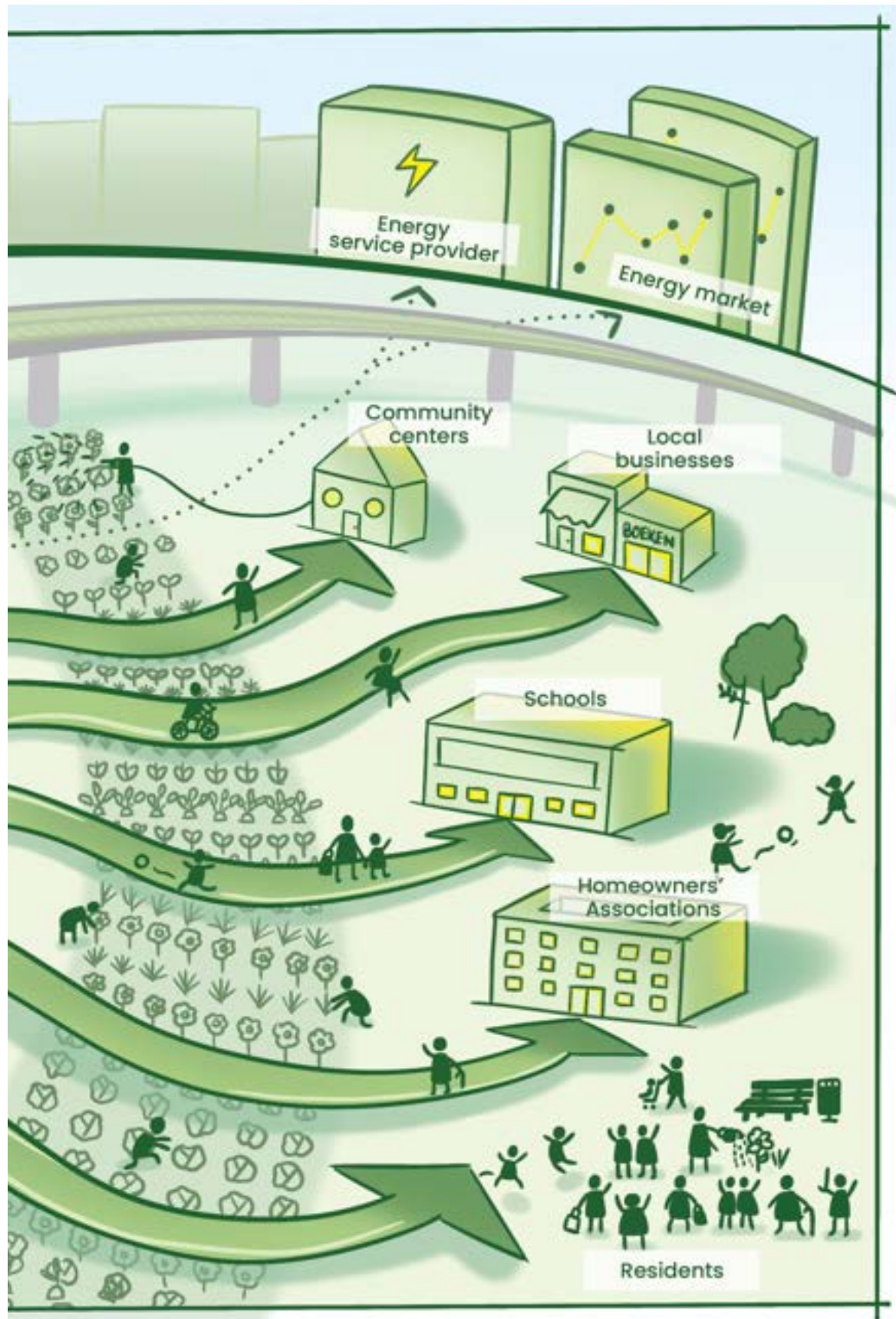
Establishing an energy community can only be done together. It requires a new way of collaborating and a fresh perspective on your local energy system. An energy community is not driven by profit. It exists as a new entity alongside the market and the government, with local **societal interests** at its core.

Many participants are active in the homeowners' association (VvE) of their apartment block. Participation of the VvE's - and the housing corporations - is important for the energy community. The map below shows which VvE's have been reached so far. Is your block not involved yet? Join us! You find the contact details on page 28.





As an energy community, your neighborhood can become its own energy supplier. The usual organizational form for this is an energy cooperative. The electricity can be delivered to residents, local schools, community centers, or businesses. In the future, you might collaborate with companies in the ArenAPoort area or invest in a neighborhood battery.



When the sun shines, residents can use solar energy from their own roof. By generating your own energy, you become less dependent on the energy market, especially if prices rise again like they did in 2022. Becoming your own energy supplier keeps the value within the neighborhood, rather than flowing to an external energy company. If all roofs in Venserpolder would be covered by solar panels, it could cover a quarter (25%) of all electricity usage in the neighborhood!

5. Away from natural gas, together?



The energy transition is a marathon, not a sprint: much will change in the coming decades. The municipality of Amsterdam wants to transition away from the use of natural gas completely. All residents will have to **replace their heating system**. You can do this just for your own house, or you can have a collective system with your neighbours. It helps to start thinking about this already, so you will not be surprised.

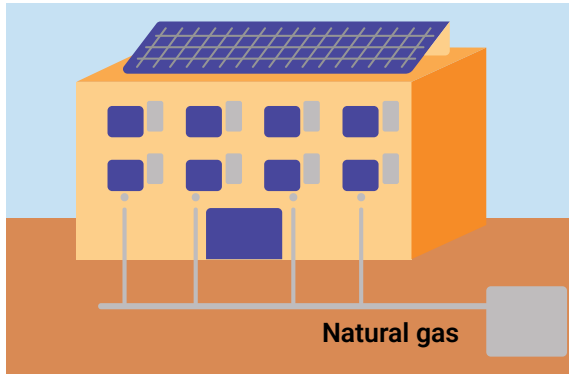
Since late 2024, the municipality of Amsterdam has officially recognized energy communities as key players in the energy transition. By joining an energy community, you can **have a say** in what happens in your city. An energy community allows you to **stand strong together** in the energy transition—towards the municipality, energy companies, and other stakeholders.

It requires a different way of thinking and a new way of working with your neighbors. Not only is this an exciting and engaging process, but it also gives you more control and independence. And, of course, it contributes to a cleaner earth.

Installing solar panels is a great first step, as electricity use will continue to increase. In the future, more people will drive electric cars, and homes may also switch to electric heating. Within the LIFE project, we have explored several different options for going gas-free.

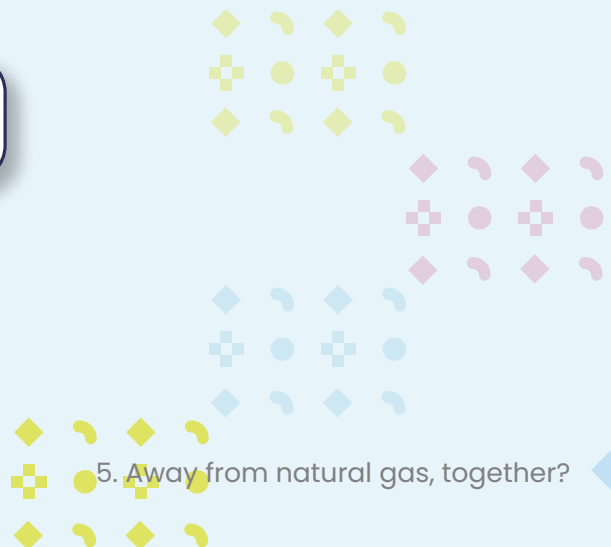
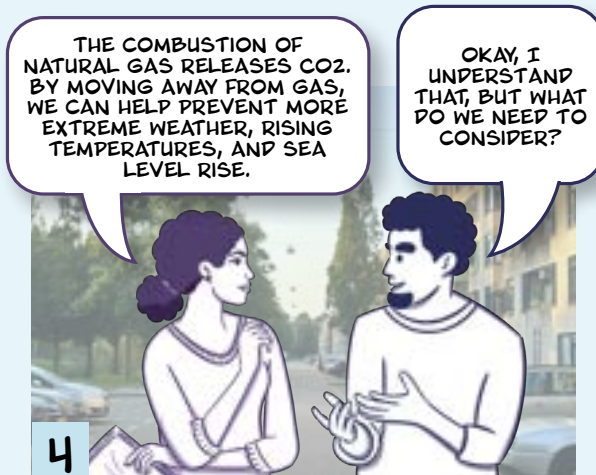
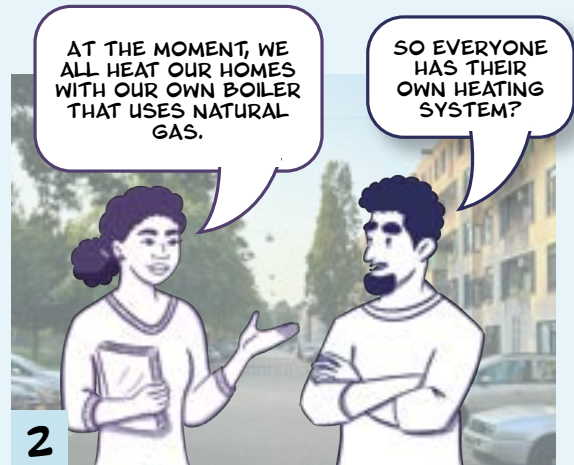
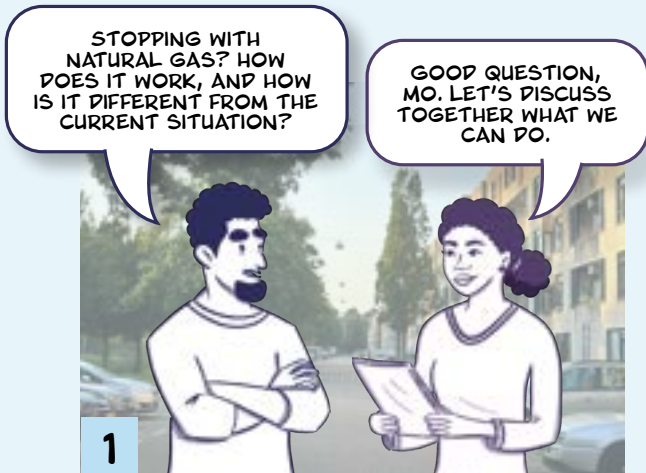
On the following pages, you can read more about these scenarios for heating your home. In the end, **you** and your neighbors can **decide** together which option suits you best.

Scenario 1

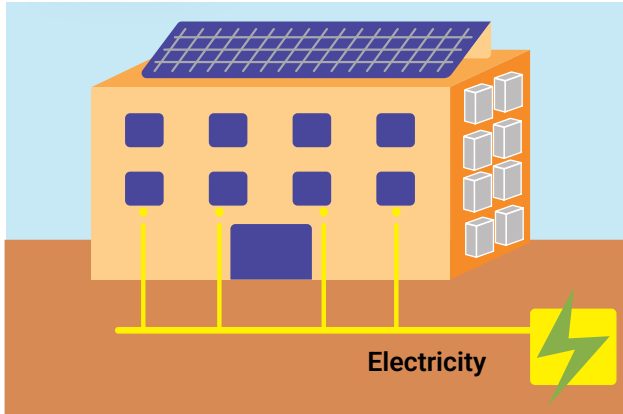


Heating with a boiler

- Each home has its own individual heating system
- Natural gas emits polluting CO₂
- Dependent on affordable gas prices
- Flexible and easy to use



Scenario 2



Heating with individual heat pumps

- Each home has its own individual heating system
- Does not emit CO2 when using green electricity
- The home must be well insulated
- Not dependent on gas prices

1 IN SCENARIO 2, THE HEATING BOILER IS REPLACED BY A HEAT PUMP IN EVERY HOME.

1



WHAT IS THE DIFFERENCE WITH THE HEATING BOILER?



2 THE HEAT PUMP RUNS ON ELECTRICITY. IF YOU HAVE SOLAR PANELS, YOU CAN HEAT YOUR HOME WITH SOLAR ENERGY - WHEN THE SUN IS SHINING, OF COURSE.

2



HOW DOES THE HEAT PUMP ACTUALLY WORK? WHERE DOES THE HEAT COME FROM?



3 THE HEAT PUMP EXTRACTS HEAT FROM THE OUTSIDE AIR. IT WORKS JUST LIKE AN AIR CONDITIONER OR REFRIGERATOR, BUT IN REVERSE!

3



OKAY, BUT WHAT ARE THE DOWNSIDES? IS IT AFFORDABLE?



4 YOUR HOME NEEDS TO BE WELL INSULATED, OTHERWISE, IT WON'T GET WARM ENOUGH. IN THE FUTURE, HEAT PUMPS WILL LIKELY BECOME MORE AFFORDABLE!

4



THAT IS GOOD TO KNOW!



Scenario 3

Collective heating with ground source heat pump



- A shared heating system for each apartment building
- Does not emit CO2 when using green electricity
- Potentially more efficient and cost-effective
- Technically and organizationally complex

SCENARIO 3 GOES A STEP FURTHER. IN THIS CASE, AN ENTIRE APARTMENT BLOCK SHARES A SINGLE HEAT PUMP.

1



SO THE SCALE IS LARGER, CAN THE HEAT PUMP HANDLE THIS?

YES, IT IS A LARGER HEAT PUMP THAT RUNS WITH PIPES UNDERGROUND. A COLLECTIVE SYSTEM CAN BE MORE EFFICIENT THAN EVERYONE HAVING THEIR OWN HEATING SYSTEM.

2



ARE YOU SURE OF THAT? MAYBE I'D RATHER HAVE CONTROL OVER MY OWN HEATING SYSTEM.

THE COSTS STILL NEED TO BE CALCULATED, AND YOU HAVE THE FINAL CHOICE OF WHAT YOU WANT TO DO.

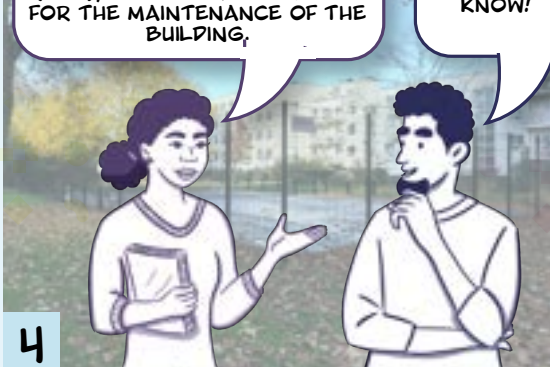
3



SO WE CAN DECIDE FOR OURSELVES WHAT WE WANT?

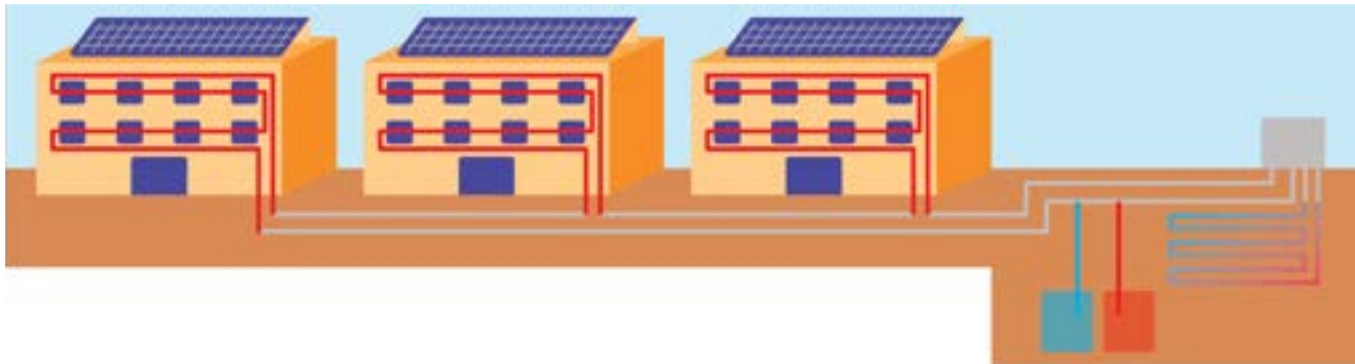
THAT'S RIGHT, YOU CAN DISCUSS IT THROUGH YOUR HOMEOWNERS' ASSOCIATION (HVA), WHICH IS RESPONSIBLE FOR THE MAINTENANCE OF THE BUILDING.

4

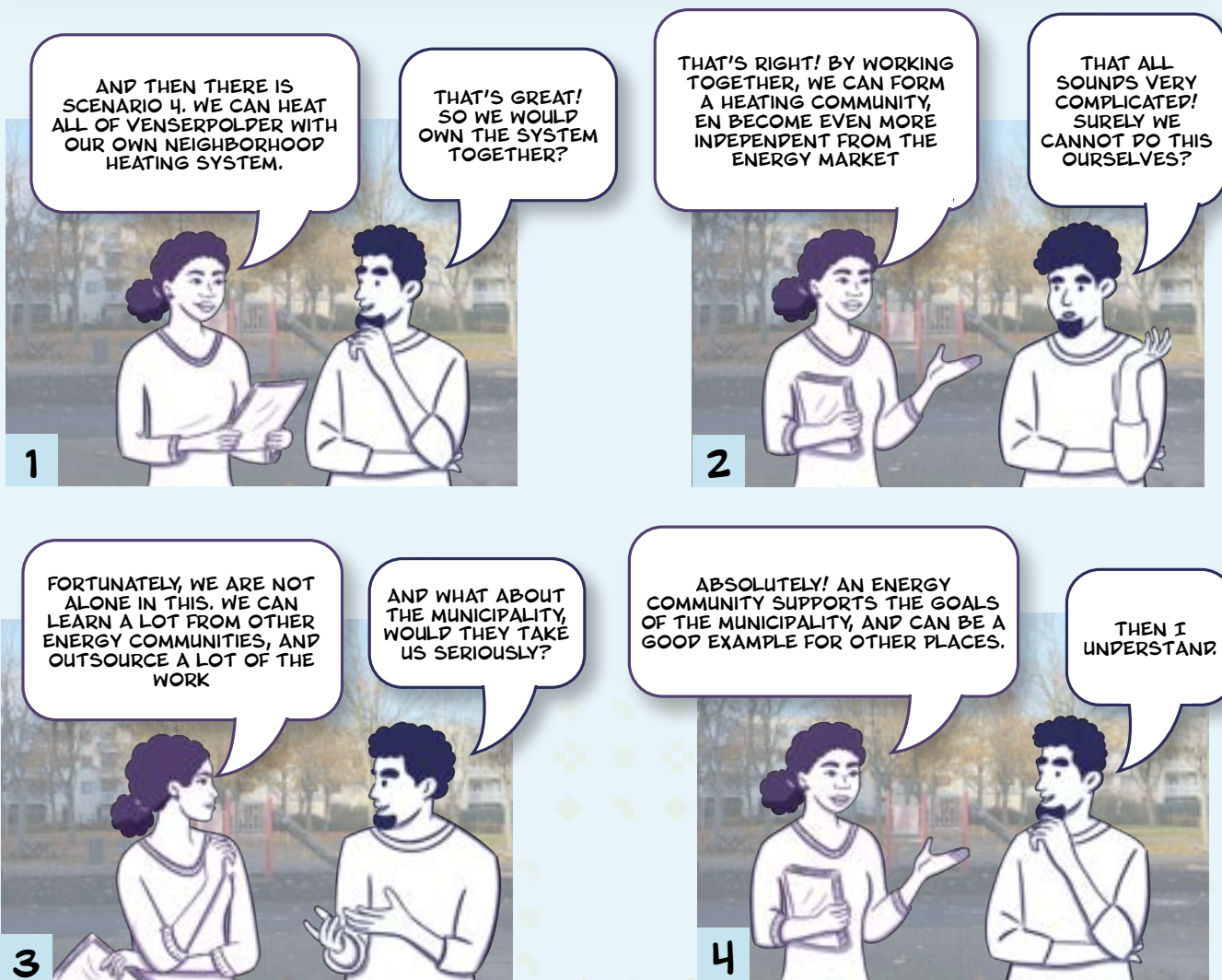


THAT IS GOOD TO KNOW!

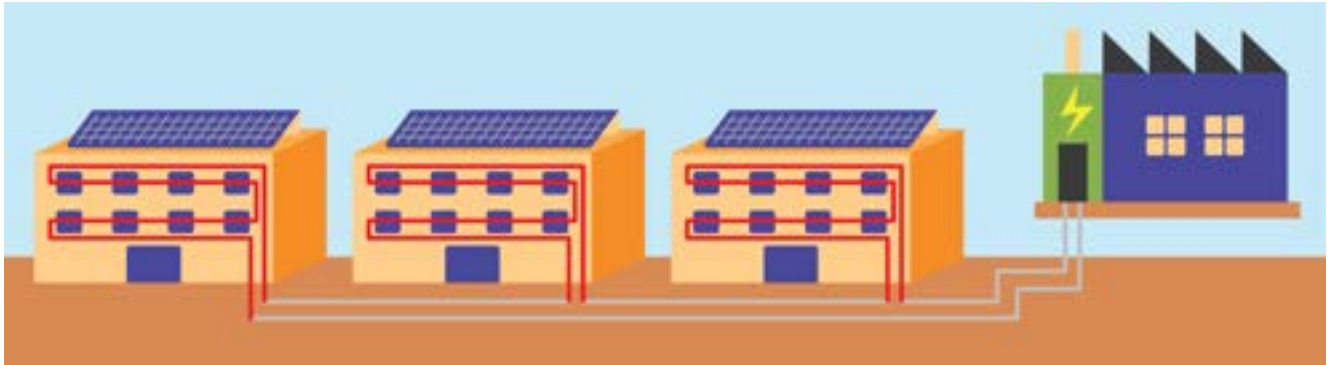
Neighbourhood heating system



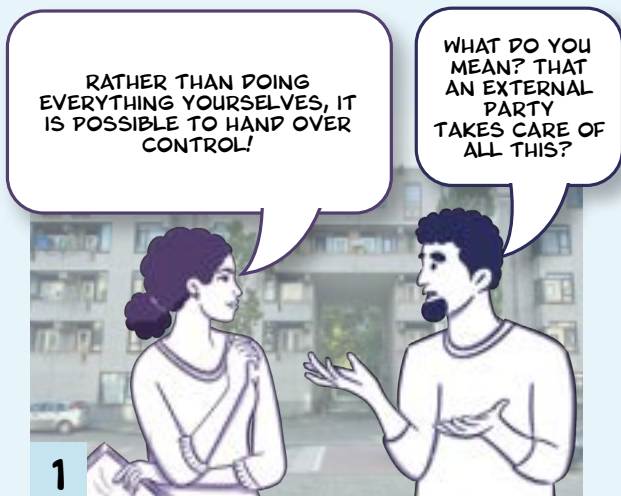
- Collective ground source heat pumps for sustainable heat generation
- A local heating network allows heat to be exchanged throughout the neighborhood
- Thermal energy storage balances heat between summer and winter
- Requires collaboration from everyone in the neighbourhood!



Handing over control



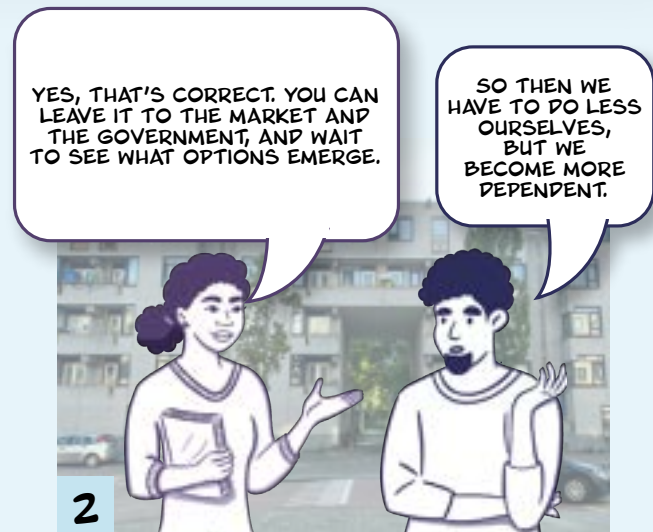
- Wait for the government or market to come up with a solution
- Less local power and control, more dependency
- Less personal responsibility



1

RATHER THAN DOING EVERYTHING YOURSELVES, IT IS POSSIBLE TO HAND OVER CONTROL!

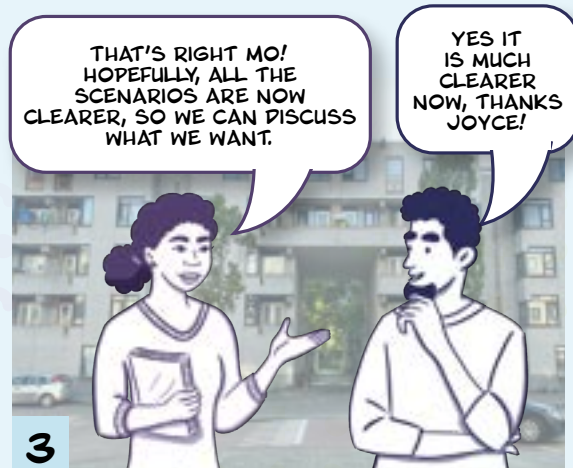
WHAT DO YOU MEAN? THAT AN EXTERNAL PARTY TAKES CARE OF ALL THIS?



2

YES, THAT'S CORRECT. YOU CAN LEAVE IT TO THE MARKET AND THE GOVERNMENT, AND WAIT TO SEE WHAT OPTIONS EMERGE.

SO THEN WE HAVE TO DO LESS OURSELVES, BUT WE BECOME MORE DEPENDENT.



3

THAT'S RIGHT MO! HOPEFULLY, ALL THE SCENARIOS ARE NOW CLEARER, SO WE CAN DISCUSS WHAT WE WANT.

YES IT IS MUCH CLEARER NOW, THANKS JOYCE!

6. Recommendations from the research team

- 1 Embrace uncertainty – do not be attached to predetermined outcomes.** Stay open to new connections, unexpected results, and surprising insights
- 2 Do not rush the process – meaningful participation requires patience.** The energy transition is a marathon, do not expect to solve everything in a couple of years!
- 3 Find a balance between encouraging residents to participate pro-actively, and unburdening them to provide a lower barrier to entry.** Some want to be closely involved and take responsibility, while others prefer to support without obligations.
- 4 Collaborate with trusted local partners.** They know where to start and what to be mindful of.
- 5 Ensure that the trusted local partners are involved as early as possible so that they can shape the project’s goals and directions right from the start.**
- 6 Include local residents in the research team.** This ensures a more equal partnership and deeper community engagement, and you can cross-check your findings with them.
- 7 Use games, playful activities, and tools like Lego to spark enthusiasm, encourage creative thinking, and make the future energy system tangible.**
- 8 Everyone loves ice cream!** Use food and local events to create a welcoming atmosphere and attract diverse groups, such as children and the elderly, to make complex topics more accessible.
- 9 Energy transition is boring for some people –** designers and artists can help to make it exciting and meaningful.
- 10 Put extra effort into making space for the voices of marginalized and underrepresented social groups.**
- 11 Participation involves shared ownership between residents and external organizations.** Make sure roles, responsibilities and decision-making power are clearly defined.
- 12 Disagreements and arguments are part of collaboration—engage with these openly, instead of forcing consensus.** They often lead to deeper understanding and stronger outcomes.
- 13 Acknowledge that power dynamics are always part of collaboration and participation –** Be aware of them and strive for a fair balance between partners.

- 
- 14 Reciprocity between stakeholders - especially residents and larger organizations—is essential for the energy transition.** Actively highlighting each other's diverse contributions and mutual dependence can help build stronger collaboration.
 - 15 Energy transition projects can include unfair exchanges between stakeholders—**take collaborative efforts to co-create more equitable partnerships.
 - 16 Include budget to compensate residents for their time, effort, and expertise.** Go beyond symbolic gestures like gift cards or volunteer reimbursements.
 - 17 Ensure that local organizations receive financial support, just like larger institutions.**
 - 18 If you are an expert, help people to understand your subject.** In return, be open to learn from them – residents are experts in their local environment.
 - 19 Long-term agendas and infrastructural changes should not overlook short-term needs and urgencies in people's life today.**
 - 20 New energy innovations should be embedded in existing local practices and networks, rather than intruding from the top-down.**
 - 21 Marking an area as “developmental neighbourhood” can be an alienating starting frame** – be careful with using such language.
 - 22 Beware about jargon: phrases like “grid congestion”, “energy transition”, “flexibility” are meaningless to many people.** Try to use everyday language and techniques such as story-telling.
 - 23 Don't merely provide information:** help to make energy transition more understandable, and support the learning process of people.
 - 24 Hire local content creators for your communication campaigns,** they know what resonates with local communities.
 - 25 Promote sharing energy within your neighbourhood, not just trading it on the energy market.** Community-focused sharing builds solidarity, whereas trading profits individuals.
 - 26 Energy transition may seem boring, but participation is important for your future.** Just like salad is less tasty than a burger, but better for your health!



Now

7. Join us!

We invite all residents from Venserpolder to join the conversation about the future of the neighbourhood. Do you want to join, or contact us for another reason? Feel free to send an email!

Contact Details

Pioneer group Venserpolder

Energy cooperative Venserpolder

energiecooperatievenserpolder@gmail.com

TU Delft

Gijs van Leeuwen

g.e.vanleeuwen@tudelft.nl

Abhigyan Singh

a.singh@tudelft.nl

Foundation Co-Force

Wouter Methorst

woutermethorst@xs4all.nl

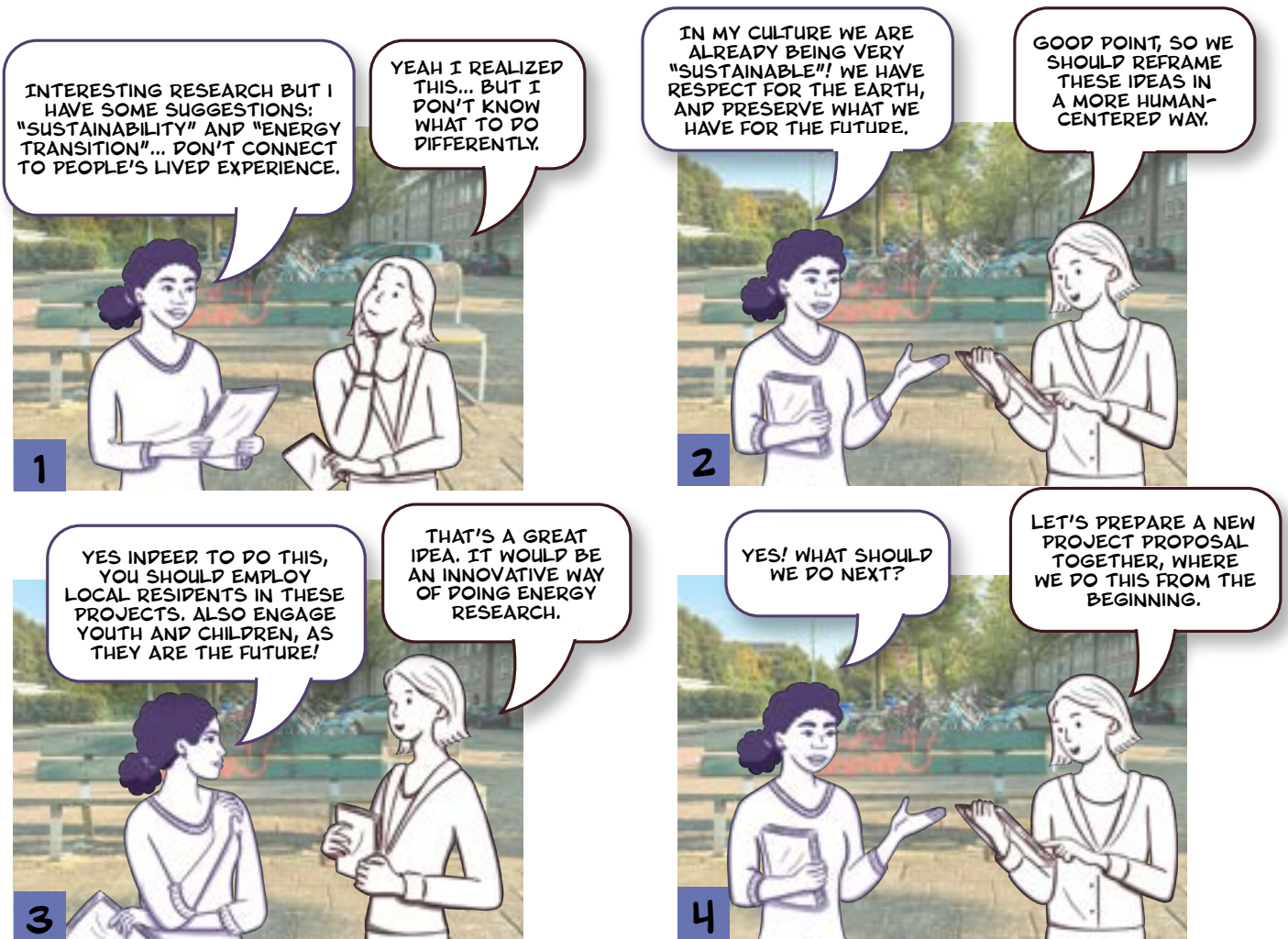
Wim van de Kamp

wim@coforce.nu

Photo of painted portraits at De Kandelaar, Amsterdam Southeast



If you want to see more of the results of this project, scan this QR code!





Thank you to the Venserpolder residents and LIFE partners who were part of this project!





Photo of wallpainting at Boeinhuis / Stichting SES in Venserpolder



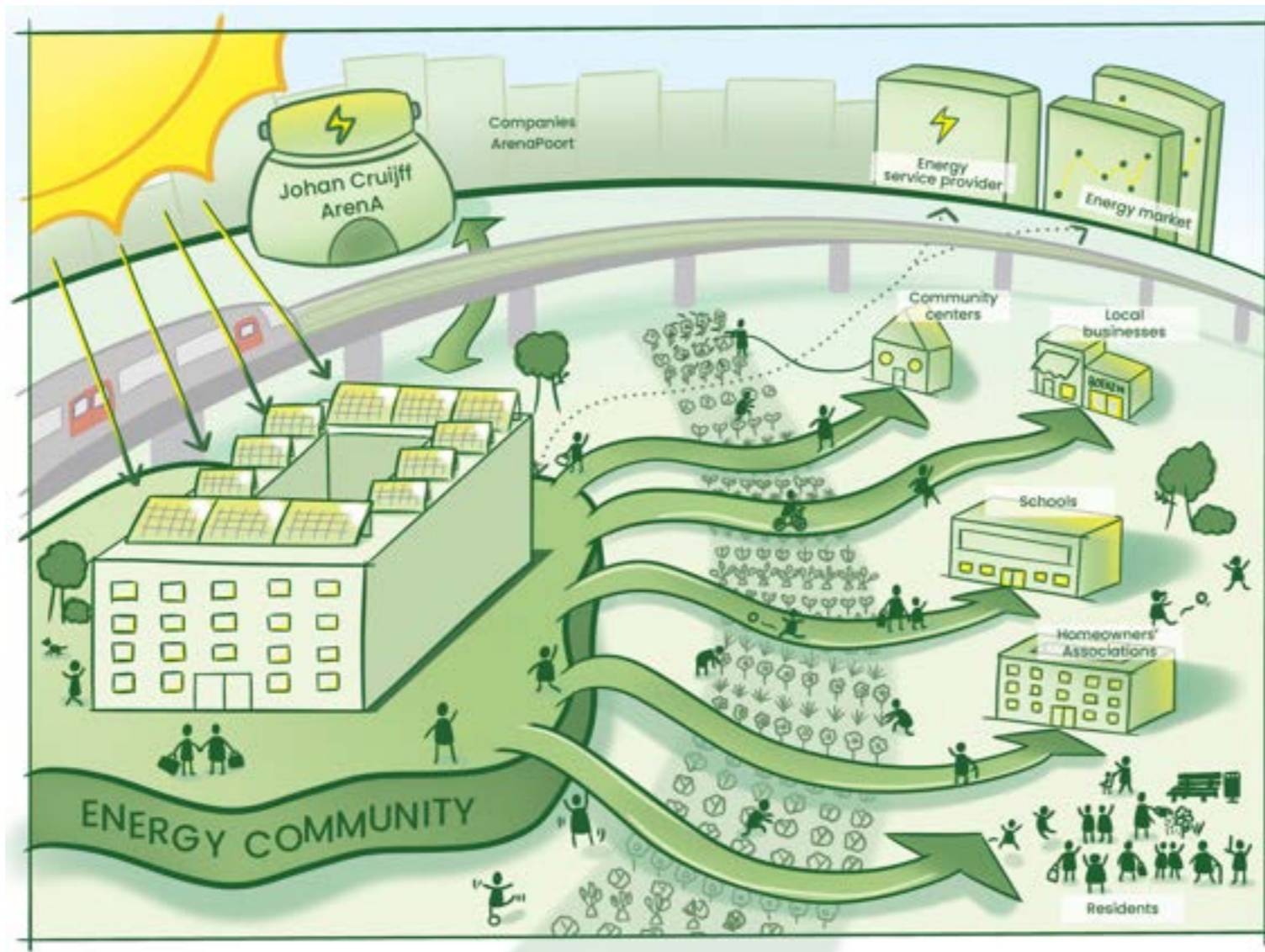


Building a sustainable
future together



This brochure provides a set of recommendations for how to organize energy transition projects in a more inclusive way. These recommendations are meant for anyone working in the local energy transition who wants to build stronger collaborations between residents, municipalities, researchers and other professionals. The recommendations address a variety of challenges and are based on lessons from four years of field research in Amsterdam Southeast.

The research was conducted as part of the Local Inclusive Future Energy (LIFE) project. The LIFE project took place between 2021 and 2025 and was a collaboration between universities, the municipality of Amsterdam, companies and local stakeholders in Amsterdam Southeast. The figure on the right shows a vision for a local energy community in the Venserpolder neighbourhood, which the LIFE project worked towards. The photos below give an impression of the various co-creation activities that were part of this project, and which resulted in this brochure.



Recommendations for an inclusive local energy transition: Responding to challenges of participation, power, and reciprocity

First edition

Van Leeuwen, G., & Singh, A. (2025). Recommendations for an inclusive local energy transition: Responding to challenges of participation, power, and reciprocity. Delft University of Technology. <https://doi.org/10.5281/zenodo.15100075>

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This booklet was created based on the insights gained from design anthropological research as part of the Local Inclusive Future Energy (LIFE) City Platform project, which was funded by the Missiegedreven Onderzoek, Ontwikkeling en Innovatie (MOOI) subsidy program from the Netherlands Enterprise Agency (RVO). The RVO is part of the Dutch Ministry of Economic Affairs.

Recommendations for an inclusive local energy transition

Responding to challenges of participation, power, and reciprocity

Gijs van Leeuwen
Abhigyan Singh



If you want to see more of the results of this project, scan this QR code!

Life Local Inclusive Future Energy

TU Delft Industrial Design Engineering

1. Inclusive participation

- Embrace uncertainty – do not be attached to predetermined outcomes. Stay open to new connections, unexpected results, and surprising insights.
- Do not rush the process – meaningful participation requires patience. The energy transition is a marathon; do not expect to solve everything in a couple of years!
- Find a balance between encouraging residents to participate proactively and unburdening them to provide a lower barrier to entry. Some want to be closely involved and take responsibility, while others prefer to support without obligations.
- Plan well ahead to secure continuity before the project ends. Without a clear follow-up plan, progress and community engagement can fade away.
- Don't tunnel-vision on finding immediate solutions, as quick-fixes may not last long and have unpredictable side effects.
- Energy transition may seem boring, but participation is important for your future. Just like salad is less tasty than a burger, but better for your health!

2. Local collaboration and trust

- Collaborate with trusted local partners. They know where to start and what to be mindful of.
- Ensure that the trusted local partners are involved as early as possible so that they can shape the project's goals and directions right from the start.
- Include local residents in the research team. This ensures a more equal partnership and deeper community engagement, and you can cross-check your findings with them.
- Take time to build relationships with local participants. Trust grows slowly but makes meaningful collaboration possible.

3. Inviting atmosphere

- Use games, playful activities, and tools like Lego to spark enthusiasm, encourage creative thinking, and make the future energy system tangible.
- Everyone loves ice cream! Use food and local events to create a welcoming atmosphere and attract diverse groups, such as children and the elderly, to make complex topics more accessible.
- Energy transition is boring for some people. Designers and artists can help to make it exciting and meaningful.

4. Power and control

- Put extra effort into making space for the voices of marginalized and underrepresented social groups.
- Participation involves shared ownership between residents and external organizations. Make sure roles, responsibilities and decision-making power are clearly defined.
- Disagreements and arguments are part of collaboration. Engage with these openly instead of forcing consensus. They often lead to deeper understanding and stronger outcomes.
- Acknowledge that power dynamics are always part of collaboration and participation. Be aware of them and strive for a fair balance.
- If power asymmetries cannot be fully balanced, explore how they can be leveraged for more constructive outcomes.
- Systemic problems tend to overpower local human needs. Make space for "the small" because it is just as important!
- Resist the need to over-structure and over-formalize everything, as this produces new mechanisms of control.

5. Relations and reciprocity

- Reciprocity between stakeholders—especially residents and larger institutions—is essential for the energy transition. Actively highlighting each other's diverse contributions and mutual dependence can help build stronger collaboration.
- Energy transition projects can include unfair exchanges between stakeholders—take collaborative efforts to co-create more equitable partnerships.
- Include sufficient budget to compensate residents for their time, effort, and expertise. Go beyond symbolic gestures like gift cards or volunteer reimbursements.
- Ensure that local organizations receive adequate financial support, just like larger institutions.
- If you are an expert, help people to understand your subject. In return, be open to learning from them – residents are experts in their local environment.
- Put efforts to mediate and translate between systemic problems and the lifeworlds of people.
- Promote sharing energy within your neighbourhood, not just trading it on the energy market. Community-focused sharing builds solidarity, whereas trading profits individuals.

6. Balancing social and technical

- A successful energy transition requires that we create stronger relational and social infrastructure. It makes collaboration easier and neighbourhoods and societies more resilient.
- Long-term agendas and infrastructural changes should not overlook short-term needs and urgencies in people's lives today.
- New energy innovations should be embedded in existing local practices and networks rather than intruding from the top-down.
- Reducing the energy bill is important, but not at the cost of social needs.
- Energy transition is not just about creating markets – it should strengthen local community economies.
- Researchers can help people navigate the potential risks of becoming active participants in the energy transition. Similarly, they can help to identify opportunities.

7. Engaging in Dialogue

- Marking an area as "developmental neighbourhood" can be an alienating starting frame – be careful when using such language.
- Beware of jargon: phrases like "grid congestion", "energy transition" and "flexibility" are meaningless to many people. Try to use everyday language and techniques such as story-telling.
- Don't merely provide information: help make energy transition more understandable and support the learning process of participants.
- Continually and repeatedly synthesize and communicate your findings. Keep your stakeholders up to date so that they remain involved.
- Hire local content creators for your communication campaigns, as they know what resonates with local communities.

