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## Design anthropology for ethics of care and emergence: Reflections from an energy transition project

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# Design anthropology for ethics of care and emergence: Reflections from an energy transition project

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**Abstract:** This paper 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 South-East. 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.

**Keywords:** design ethics; design anthropology; care; emergence

## 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



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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 2.

We illustrate the design anthropology approach using reflections from an interdisciplinary research project in the context of the local energy transition in Amsterdam South-East. Section 3 describes the project and its context: an underprivileged neighborhood where residents deal with interconnected socioeconomic challenges. In section 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 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.

## **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.

### **3. Empirical research context**

The research is part of an ongoing interdisciplinary energy transition research project situated in Amsterdam South-East, 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 1 Selection of key research activities*

#	Date	Activity
1	17-11-2021	Ethnographic field visit to Venserpolder
2	16-12-2021	Ethnographic field visit to Venserpolder
3	24-01-2022	Ethnographic field visit to Venserpolder
4	17-03-2022	Ethnographic field visit to Venserpolder
5	25-10-2022	Workshop with LIFE project consortium partners
6	28-03-2023	Workshop with LIFE project consortium partners
7	28-04-2023	Workshop with LIFE project consortium partners
8	16-05-2023	Workshop with representing consortium partners
9	03-07-2023	Co-creation session with residents in Venserpolder
10	25-09-2023	Co-creation session with residents in Venserpolder
11	13-11-2023	Co-creation session with residents in Venserpolder
12	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 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.

## **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 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 4.2. Finally, section 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.

### ***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 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.

#### *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 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.

#### *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 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. 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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