BORI FEHÉR, JANKA CSERNÁK (EDS.)

DESIGNING TRANSFORMATIVE CHANGE

THE POTENTIAL OF COLLABORATION AND CREATIVITY IN CRISES

Proceedings of the Social Design Network's Conference "On the Verge: Design in Times of Crisis"

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Bori Fehér, Janka Csernák (eds.)
Designing Transformative Change

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Head of the Committee: Dr Bori Fehér
Members of the Committee: Dr Janka Csernák, Prof Shilpa Das, Dr Alvise Mattozzi, Galit Shvo, Dr Andreas Unteidig, Prof Jonathan Ventura
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Foreword

Bori Fehér, Janka Csernák

In recent decades, designers have been increasingly called upon to embody qualities such as sensitivity, empathy, and humility in their practice. This shift underscores the profound responsibility designers bear in addressing societal needs and navigating complex global issues. Design, as a discipline, has historically demonstrated responsiveness to societal developments and crises. However, amidst the multifaceted challenges of our times, there is a growing discourse surrounding the potential for design to not only react but also serve as a catalyst for transformative change. This discourse raises pivotal questions about the role of design in fostering hope, generating realistic solutions, and mitigating global and local crises.

As the world grapples with various crises, including conflicts and environmental disruptions, the role of the designer becomes increasingly nuanced and complex.

Drawing upon interdisciplinary perspectives and empirical research, as well as case studies, authors of this conference proceedings critically examine the evolving role of designers in responding to contemporary crises. Sharing case studies, interrogating the intersections of design with social, political, and environmental issues, authors aim to contribute to a deeper understanding of the transformative potential of design as well as its limits in navigating the challenges of the 21st century.

Global warming, loss of biodiversity, droughts, famine, war, populism, a global pandemic, political polarization, economic crisis, inflation, rising inequalities, and eroding educational systems: Current and anticipated crises, resulting from what is called 'development', are fundamentally shifting and reshaping our being in the world on many levels (global/local, micro/macro, social/individual, etc.) and the ways they are dealt with have been marked by a profound insensitivity to the environment as well as a callous disregard for humankind. In various forms, these crises have rendered illusions of stability about political order, economy, and ideas of progress obsolete. They have also perpetuated and frequently escalated the divisions within and between populations, socio-economic classes, and communities. Formal political structures of our time seem to be limited in their capabilities to confront the entanglement of crises on their own.

Design, as a discipline, responds to current developments, reflects upon and reacts to past and current crises. Can design bring much-needed, fundamental

changes? How might design stand out in relief as a sign of hope? How can it lead to the emergence of realistic solutions and usher positive change on the global and local scale? And more importantly what are the pathways that could potentially lead to these common futures? How can we intervene to address the growing numbers of various planetary disruptions? The Social Design Network Conference looked into these pressing questions. This edited volume presents the work of authors who presented them during this conference in November 2023 at Moholy-Nagy University of Art and Design Budapest (MOME).

The Social Design Network (SDN) was founded in 2020 by Bori Fehér and Jonatan Ventura with the aim of bringing social design educators, researchers and practitioners closer to combat the complex, multifaceted challenges we have in front of us. Since its inception the SDN has been organising various events. Their inaugural symposium took place at MOME in 2020, followed by a conference in Jerusalem in 2022. Since then the SDN has launched various other projects and initiatives, and most importantly, built relationships and created space for knowledge exchange to combat isolation and initiate positive change. The SDN is currently a voluntary organisation where the aim is to bring people together from around the world to discuss pressing topics and also to act and initiate change together. The goal of the SDN is to create a space for knowledge sharing and combat isolation, thereby fostering collaboration and innovation within the community of social design educators, researchers and practitioners. Over the years, members of the SDN collaborated on research topics dealing with the intersection of design and opportunities for displaced communities, and currently it tackles the question of inter-institutional collaborations between higher design/art education and the non-profit sector by developing methodological recommendations for future change agents. The conference concept originated from the initiative's desire to facilitate closer interactions among knowledge experts and provide a platform for exchanging ideas. It is the intention of the SDN to organise conferences like this every two years at various locations related to members of the Network.

This conference in Budapest was organised by the SDN in collaboration with the Social Design Hub at MOME Innovation Center, which is the social design focused research unit of the university. The Social Design Hub focuses on issues of social change and develops innovative, practice-based design research. Its aim is to generate new knowledge, serve as a knowledge center and support related activities around MOME. The Hub seeks solutions to decrease inequality and foster resilience for all.

The conference was developed by a committee that was created through a voluntary application process within the Social Design Network.

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Conference themes

Design, as a discipline, responds to and develops in accordance with overarching challenges since a clear 'social turn' has taken place more than a century ago. This paradigm shift poses questions to long-held beliefs, practices, and concepts in and about design itself. Even though the terrain may seem bleak due to crisis situations, questions arise as to whether design can shake up the apathy and contribute to bringing about much-needed, fundamental changes.

The international SDN conference brought together scholars from various disciplines to explore how design responds to and shapes our understanding of crises by encompassing a range of activities and interventions. In this edited volume, contributors explore topics such as the role of designers in responding to crises; the capacities and literacies necessary for responding; how current forms of thinking about design may be shifting in the context of transformation; different ontologies and their implication for designs' ability to grasp and respond to the interconnected nature of permacrisis; the relationships between design and other disciplines in responding to crises; the potential for design to shape our understanding and response to crises; and adaption of design education as a response to "the long emergency".

Conference presentations responding to the pressing questions above were submitted along four tracks with a particular emphasis on approaches oriented towards design studies. Papers featured in these tracks can be found in Chapter 1–4. A separate track created for PhD and MA submissions welcomed visual-based contributions to highlight how young emerging scholars, designers and practitioners respond to crises. These contributions are included in Chapter 5 with presentation abstracts and visuals.

Furthermore, to highlight a field-based, embedded aspect of synergies between scholars and practitioners of the social design field, panel discussions, workshops and presentations were also included in the conference, with the participation of relevant local actors, NGOs, and initiatives in and around Budapest. This program was organized with the Science Shop of Corvinus University, a Budapest-based institution with a lively Social Studies network and a strong emphasis on social innovation. Chapter 6 features a description of the Activation Day programs, where one-

day workshops were organized simultaneously in partnership with three selected local NGOs, each of them providing a case study of a current challenge they've faced. Invited speakers, conference participants and students had the opportunity to work on these challenges in collaboration with the NGOs, bringing diverse expertise to the forefront of the conversation.

Contributions

Papers in this edited volume are divided into four Chapters based on their angle on crises: (1) Understanding Design and Crisis; (2) Crisis, Literacies, and Practices; (3) Crisis and Communities; and (4) Crisis and Education. All four Chapters respond to different aspects of how design can relate to crises and to the question of how design education can prepare for these constant changes and increasingly complex issues. The positionality and research profile of MOME Social Design Hub organiser of the Conference results in featuring a strong focus on practice-based methods and the tangible aspects of design in crises. Besides a theoretical framing of crisis within the track 'Understanding Design and Crisis', the other three Chapters explored practical, field-based or collaborative aspects of design in crisis.

Papers featured in the following chapters feature short and long papers, theoretical papers, as well as literature reviews and case studies. All papers were selected through a blind peer review process.

The editors would like to thank everyone who contributed to the creation of this edited volume and the Social Design Network Conference in 2023.

Chapter 1 / Understanding Design and Crisis

This Chapter features contributions that reflect upon and examine (current and future) conceptual understandings, models, and theoretical frameworks that enable a better understanding of design and crisis. The contributions include established and new formulations, articulations, and methods demonstrating how design and crisis are interlinked or what one has to do with the other. What kinds of crises are deemed relevant for design and necessitate a call for action? Investigations into both design and crisis and how they may shape or impact each other are requisite if we are ever to garner a better understanding of our human experiences, whether psychologically, phenomenologically, artistically, politically, or socially. The Chapter features topics such as post-disaster living, biopolitics, gendered spaces and the challenges of urban co-living.

A Collaborative Approach to Designing Post-Disaster Living Spaces After the 2023 Earthquake in Türkiye

H. Gamze Ekin & Begüm Akkaya

Abstract *In February 2023, a destructive earthquake struck southern Turkey and Syria, leading to widespread devastation and the displacement of millions. I-AM, in collaboration with various organizations, embarked on a corporate social responsibility initiative to design healing living environments aimed at fostering solidarity and community among survivors. Their inclusive design approach, utilizing the co-design methodology, successfully addressed the diverse needs of survivors, categorized into sheltering, basic needs, social needs, and recreation. This approach facilitated active stakeholder participation and is poised to serve as a valuable model for future post-disaster design projects, promoting collective, sustainable, and healing living spaces for survivors.*

Author keywords *post-earthquake; container city; co-design; participatory design; stakeholder*

Introduction

In February 2023, a massive earthquake hit southern Turkey and Syria, affecting a very large area and leaving over 50,000 people dead, with 3.3 million people displaced. The International Organization for Migration estimated over 2.7 million people were made homeless (UN Office for the Coordination of Humanitarian Affairs, 2023). The disaster prompted a response from governmental and non-governmental organizations alike, with the primary objective of creating a safe living environment for the survivors. After an earthquake of such serious destructiveness, the immediate mobilization of both government institutions and non-governmental organizations for search and rescue efforts and urgent shelter solutions led to the emergence of societal solidarity, enabled especially by the power of social media. As Hilhorst (2013) argues, crisis response, as well as the crisis itself, is shaped by social dynamics and should never be analyzed in isolation from the society itself. After the earthquake, both individuals and institutions from diverse

segments of Turkish society offered assistance in various capacities, aligning with their respective capabilities.

Turkey, being a region with intense seismic activity, has experienced earthquakes of varying destructiveness for centuries. Following the 1999 Marmara earthquake and the constructional and social damage it left behind, a societal debate emerged regarding the destructiveness of earthquakes being attributed not to the earthquake itself, but to the lack of earthquake-resistant construction. The extensive damage and high mortality rate after the February 6 earthquake, the most severe in Turkish history, prompted a societal discourse on the human dimension of design and, consequently, its role as a crisis-inducing factor. Fry & Nocek (2021, p. 4) frame their perspective for design and planetary crisis as follows:

"The challenge, which has so far not been met with an adequate response, is to see how this planetary crisis puts design itself in crisis: human and non-human ontologies cannot be reimagined without rethinking the very being of design. In short, design is immanent to crisis."

Being both members of the Turkish society and the design community, we, as I-AM experience design agency, wanted to embark on a quest for a solution by leveraging our capabilities, feeling corporate responsibility towards this significant issue. Rezai (2021) states that within the context of design activism, the awareness of the designers on societal problems is established through being part of the change. Recognizing the responsibility to contribute to addressing the most severe disaster in our history and actively seeking solutions, we initiated a collaborative post-crisis project aimed at designing healing living spaces that would foster a sense of solidarity and community among the survivors.

Discussion

Following the devastating disaster, several governmental and non-governmental organizations both in Turkey and worldwide rushed to help the affected people in the area. After the immediate response to help the survivors get out of the wreckage, the second immediate problem to be solved was the temporary accommodation of the survivors.

The Izmir Chamber of Commerce took initiative to develop a container project for the earthquake zone to overcome the challenges related to the time required for the delivery and installation of ready-made containers, the need for substantial equipment, the logistics involved, and uncertain locations. This project was designed to fulfill the immediate housing needs of the survivors while minimizing infrastructure necessities. After being informed of the project's commencement in conjunction with the Izmir Chamber of Commerce, the IDEALIST Interior Design Association reached out to extend their support. They expressed their intention to

contribute to the design and manufacturing of interior furnishings for these containers. As IDEALIST is an interior design association whose purpose is "to work towards the development of interior architecture, from education to professional life, in accordance with international standards and an innovative approach", they immediately reached out to their members and business associates and brainstormed ideas on how to create livable spaces for the earthquake area. Various interior design agencies registered to IDEALIST Association, one of which is I-AM, volunteered to design different areas of the neighborhood, taking into account their own competencies and experiences in doing so.

As I-AM, we took charge of the design of the interior living spaces of the containers and initiated the project's development into a master plan that can be utilized not only for this particular disaster but also for potential future disasters. While pursuing this, we deemed it suitable to view this project not only as a straightforward interior design task, but rather as an integrated social design project that incorporates relevant social cooperatives and non-governmental organizations. The literature suggests that participatory and collaborative approaches in social design practices play a vital role, offering methods which promote a mutual learning environment through the active engagement of all relevant participants (Gürdere Akdur, 2023).

Furthermore, the importance of these practices lies in their capacity to extend beyond the co-design of shared outcomes. They entail a distinctive approach to surveying and expanding multiple potential pathways for sustainable change within broader contexts of social transformation (Smith & Iverson, 2018). With that in mind, we collaborated with other stakeholders including the Needs Map Social Cooperative; IDEMA, an entrepreneurship initiative for socio-economic development projects; and Center for Spatial Justice, a social collective who made it their "duty to produce, collect and share qualified, innovative and public knowledge on space through a transdisciplinary approach" (Center for Spatial Justice, 2024). Various design teams that were members of IDEALIST Interior Design Association also participated in the project through the initiation of the IDEALIST. Together with all the stakeholders, especially NGOs, we defined the list of the possible needs and reviewed the global standards in post-disaster living spaces.

The Joint Living and Community Spaces Strategic Approach and Concept Design report, a result of the collaborative effort by KAF Komün, Aposto, Neol, and ATÖLYE in the aftermath of the earthquake, brought forth the following themes: fostering community bonding through essential needs like daily hot meals and clean water, creating shared community spaces through simple and minimalistic spatial solutions, and enhancing participation through supporting functions such as psychosocial care, healthcare services, and women's support circles (KAF et al., 2023).

One of the most crucial insights we needed to acquire before entering the design process of the project was the psychological impact of the disaster on earth-

quake survivors. World Human Relief, a nonprofit and non-governmental organization, plays a crucial role in conducting trauma-focused psychosocial support activities in disaster-stricken areas through expert collaborations. Valuable insights gathered by clinical psychologist Dr. Ezgi Deveci, a clinical psychologist affiliated with World Human Relief who conducts studies within community living spaces in such contexts, made us even more strongly aware of the vital nature of our efforts in container cities. These insights are from Ezgi Deveci's perspectives gained through her interviews and observations with earthquake victims in the affected area, communicated to us personally. The insights underscore the profound impact of environmental conditions, giving rise to a myriad of physical, psychological, and social challenges.

Some of these insights can be summarized as follows:

1. **Extreme Climate Conditions**: Due to the region's extreme air temperatures, there is a pressing need not only for indoor shelter areas but also for outdoor living spaces to ensure comfortable living conditions.
2. **Privacy Challenges:** The closely spaced living units, which lack personal space, present challenges in preserving privacy. This situation hinders social interactions and contributes to conflicts among families. Additionally, findings from case interviews conducted by Deveci reveal that due to the conservative nature of the region's residents, women and young girls are at risk of domestic violence, especially when leaving their living units without permission or interacting with their boyfriends.
3. **Absence of Social Spaces**: Notably, designated areas for women and young individuals to gather, interact, engage in communal activities, or participate in productive endeavors are absent in the post-earthquake environments. This limited access to social support can be considered a contributing factor to the decline in the well-being of individuals who already have limited resources within container facilities, perpetuating traumatic symptoms (Olff, 2012; Stephans & Long, 1999; Somasundaram and Van De Put, 2006).
4. **Complications with Shared Facilities**: The design and arrangement of communal bathrooms and toilets have led to declining hygiene standards and reduced usage, as people feel their privacy is safeguarded inadequately. This aspect significantly contributes to the deterioration of both physical and psychological health (Dückers et al., 2017).

In the literature on psychological support following major disasters, the top priority consistently revolves around relocating individuals to a secure environment where they can find solace, have their basic needs met, and seek comfort in each other's company. The fulfillment of these basic needs and the fostering of communal bonds are crucial initial steps toward recovery (Miller & Rasmussen, 2010; Rao, 2006). In conclusion, it is imperative to emphasize that reimagined living spaces serve as in-

valuable tools capable of significantly improving individuals' psychological well-being and facilitating their journey to post-traumatic recovery.

The Design Process

Following the insights we acquired upon carefully reviewing the literature, we based our designs on the container plans provided by the Izmir Chamber of Commerce. Container cities in post-disaster zones generally appear as spaces urgently arranged side by side, intended for the benefit of a large number of people, with public toilets placed outside living units, which is unsafe especially for women and children (Figure 1). The existing containers are planned like dormitory rooms with as many bunker beds as possible, and not as adequate living spaces. There are not enough storage units, tables and chairs, and study areas especially for children, which are necessary for medium-long term life. Furthermore, while examining the sample containers previously used in various earthquakes, we observed and studied how people attempted to personalize those spaces, analyzing how individuals tried to customize these places both functionally and through design contributions.

Figure 1: Existing Container Cities in Post-Disaster Zones. Photo: AA.

We formed our "how might we" question as "how might we make the urgent necessity of 'living together' in post-disaster zones more comfortable and personalized?". Taking this into consideration, we shaped our design approach as follows:

- Creating sustainable, collective, healing living spaces that nurture solidarity and companionship.
- Establishing flexibility within the modular and convertible structure of the containers, both internally and in relation to each other.
- Creating neighborhood-scale spaces that address location-based needs by diversifying shared-space functions.
- Defining zones where users can express themselves alongside their vital needs, allowing for personalization.

Towards defining our design approach for life in container areas, we centered our ideas around keywords such as togetherness, gathering, and protection. We based our design principles on the prominent aspects highlighted in the existing research. These aspects included personalization, privacy, ergonomics, socialization, security, and sustainability.

We categorized the needs list into four groups:

1. **Sheltering**: Living modules (for 4, 5, 6 people), courtyard, garden, toilet/bathroom.
2. **Basic Needs**: Kitchen (cooking & dining), laundry (washing, drying).
3. **Social Needs**: Education (study, library), children (play, workshop).
4. **Recreation**: Sports facilities, children's playground, activity area.

Design Outcomes & Expansion Principles

Following the immediate aftermath of the earthquake, the authorized agency appointed by the government, the Disaster and Emergency Management Presidency (AFAD) which operates under the Ministry of Interior, concurrently initiated the relocation of survivors to existing container cities alongside search and rescue efforts. According to data published by the Anadolu Agency as of April 24, 2023, following the February 6 earthquake, approximately 145,000 earthquake survivors were accommodated in around 75,000 containers across Turkey. (Şahin, 2023).

In developing our settlement plan, our approach was based on the emergency shelter standards outlined in the Emergency Handbook published by the United Nations High Commissioner for Refugees (Table 1).

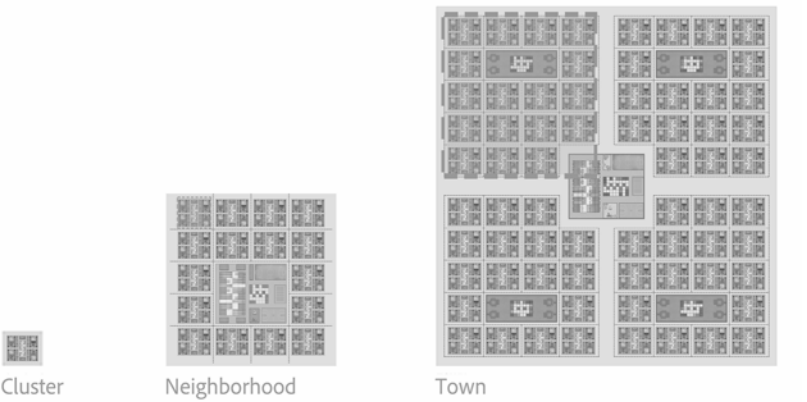
Our aim for the upcoming settlements was to accommodate as many families as possible at the highest level of comfort possible. The project also aimed to have certain expansion principles in place, as it was intended to be applied to areas of various sizes that partnering NGOs might find in the region. Additionally, we aimed at developing a master plan that could be utilized in case of other potential disasters. Life units were designed to add to one another and scale up to neighborhood and town levels. The smallest unit, a cluster, consists of 16 containers and is intended to ac-

commodate between 64 and 80 people. 16 clusters together form the neighborhood unit which has the capacity to house approximately 1,000 to 1,200 people. When four neighborhoods come together, they transform into a town accommodating 4,500 to 5,500 people with 1156 containers (Figure 2).

Table 1: Indicative modular planning units (Source: UNHCR Emergency Handbook)

Module	Structure	Approximate number
Family	1 x family	4 - 6 persons
Community	16 x families	80 persons
Block	16 x communities	1,250 persons
Sector	4 x blocks	5,000 persons
Settlement	4 x sectors	20,000 persons

Figure 2: Growth Program. Plan: I-AM.



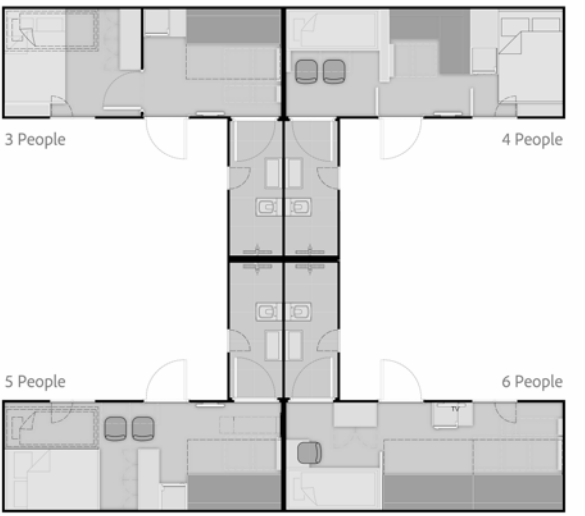
Sheltering

We started with the idea of optimizing the usage areas of the existing containers within the current layout, both in terms of interior and exterior spaces. Due to the

restricted volume of interiors, we were aware that we needed to create a flexible interior design to cater to the varying needs of different numbers of people, such as watching television, storing food and belongings, and studying.

In container cities, the concentration of wet facilities in a specific location poses both security and hygiene issues, especially for women and children (Association of Public Health Specialists – Turkey, 2023). We worked on ensuring that every family, no matter how small, has access to their own bathrooms. The existing containers of Izmir Chamber of Commerce did not include wet facilities, so we designed an H-shaped layout, allocating an additional fifth container for every four containers, dividing it into four parts, and providing a separate entrance from each container, thus creating a private bathroom and toilet area for each family (Figure 3). In doing so, we didn't use more containers compared to the existing container city plans; in fact, we integrated the containers that would serve as shared wet facilities into our layout as personalized bathrooms. Moreover, we aimed to facilitate construction processes such as wastewater collection and wastewater separation by placing H-layout container units in a linear arrangement.

Figure 3: House Types. Plan: I-AM.



One significant reason for proceeding with such a layout was the intertwining of outdoor and indoor living in the Southeastern Region of Turkey. Faiz Büyükçam and Zorlu suggest that the notion of privacy, along with factors such as the climate and topography, has played a role as a socio-cultural element in shaping traditional housing in the region. They particularly emphasize that the influence of the concept of privacy on housing can be observed across various aspects, including spatial organization, facade characteristics, and the usage of exterior spaces as courtyards (Faiz Büyükçam & Zorlu, 2018). Accordingly, we aimed for a culturally-informed design that would inspire the inhabitants to continue their own lifestyles in our container neighborhood. Furthermore, the tradition of large families living together in this region with shared amenities correlates with land ownership (Ökten, 2006). Basing our approach on this insight, we wanted to place the containers facing each other with a courtyard in a way that would be closer to this lifestyle. By creating spaces where relatives can live in close proximity, we emphasized the importance of continuing solidarity inside the families (Figure 4) (Figure 5).

Figure 4: Cluster with H Modules. Plan: I-AM.

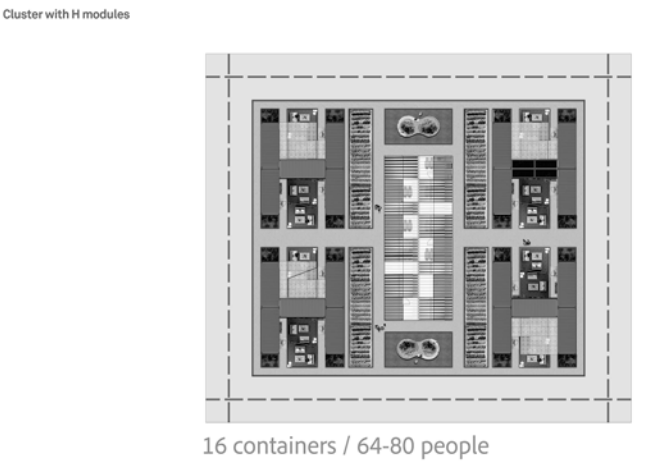
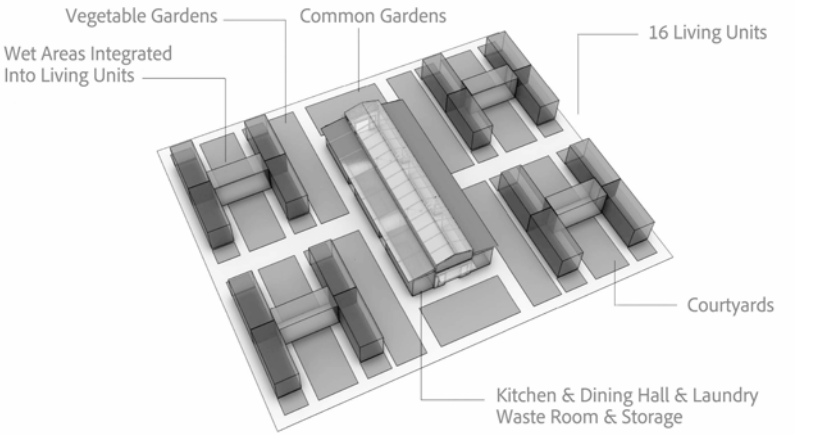


Figure 5: Cluster with H Modules. Render: I-AM.

Basic Needs

The lack of kitchens inside the living units, especially in container cities and tent camps, is indeed an appropriate measure considering the risk of fire. For this safety concern, and also due to the narrowness of interior spaces, we decided not to include kitchens inside the containers. In existing container cities, there is usually a dining hall arrangement to meet the survivors' food needs. These dining halls have a meal distribution system established by specific NGOs, municipalities, and governmental institutions. However, from a psychological perspective, survivors who have been receiving sustained meal support from specific organizations for a long time in such temporary collective living spaces can be alienated from their daily routines, whereas they need a system where they can preserve their own daily lifestyles. This led us to create kitchen islands in the central parts of our container neighborhood master plan. Within these kitchen islands consisting of four containers, we provided cooking solutions and placed tables to fulfill the need for communal gatherings. Moreover, we designed small gardens within these islands where people can grow their own food. We considered it essential to create spaces where individuals can engage in activities that can psychologically benefit the human spirit, such as cultivating the soil (Millican et al., 2018). The central island also houses a laundry room and waste disposal room to cater to some of the essential living needs of the unit's residents (Figure 6).

Figure 6: Growth Program in 3D Render: I-AM.



Social & Recreational Needs

The design team undertook the task of crafting social spaces at the neighborhood and town levels, which emerged from the clustering of other clusters and neighborhoods. At the neighborhood scale, these social spaces encompass public facilities (including a supermarket, pharmacy, and infirmary), educational zones (comprising classrooms, technology hubs, playrooms, study centers, and workshops), baby care facilities, as well as distinct recreational and activity areas catering to both men and women. The aim was to incorporate all necessary social amenities within these neighborhoods, catering to anyone seeking to regain a foothold in life and to those aspiring to acquire vocational skills, enabling their reintegration into social life in the future.

The requirements mentioned above pertain to a cluster accommodating 16 clusters, consisting of 256 containers, and serving 1200 individuals (Figure 7). As the population size grows, the facilities also transform; for instance, the study center can evolve into a school, and the infirmary can develop into a polyclinic. At the town level, an addition to existing social amenities includes the incorporation of a nursery and a primary school (Figure 8). These educational buildings, designed with secure play areas for children, offer specialized spaces tailored to the needs of distinct age groups. These spaces include facilities such as areas for breastfeeding and diaper changing, sensory integration spaces for children aged 1–4, and dedicated educational zones for those aged 6–12. Furthermore, communal workspaces were established to accommodate survivors who must continue their work while rebuild-

ing their lives. The health units on the town scale, designed under the supervision of an interior team experienced in health services, encompass observation rooms, doctor's offices, clinics, and injection rooms, effectively constituting a family health center equipped for minor medical interventions.

Figure 7: Neighborhood Level. Plan: I-AM.

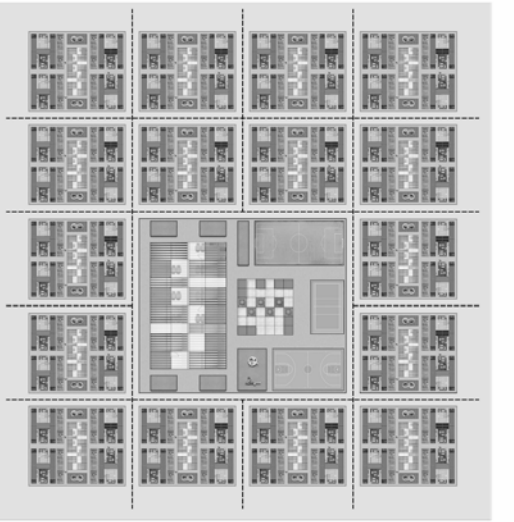
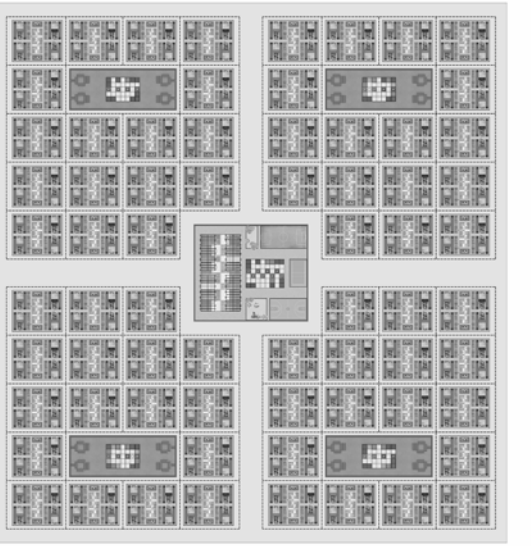


Figure 8: Town Level. Plan: I-AM.



Security

In container cities, security measures encompass diverse parameters, with traffic safety being a pivotal concern. Traffic safety necessitates the provision of transitions between containers that adhere to appropriate standards for both pedestrians and vehicles. The neighborhood should incorporate well-designed pavements and crosswalks, facilitating secure pedestrian mobility. Roads must be engineered to accommodate emergency vehicles like ambulances and fire trucks efficiently. These wide passages can serve as fire safety lanes, particularly crucial for structures prone to fire hazards, simultaneously serving as dividers between zones. This tactical layout also functions as a rapid response mechanism to potential fires within clusters or neighborhoods, preventing them from spreading to adjacent units.

The significance of lighting in communal areas cannot be overstated in terms of safety. Well-designed and adequately illuminated vehicle and pedestrian pathways not only enhance security but also exert a positive psychological impact on residents.

A chief challenge in the development of post-disaster collective living areas is ensuring access to clean water. Establishing a well-planned infrastructure that can provide clean water to the designated areas within each living unit is a crucial step toward meeting the needs of the residents.

Another commonly encountered issue in post-disaster collective living areas is the threat of flooding. To safeguard container units against water accumulation and moisture-related predicaments, they must be situated on elevated and well-insulated foundations, conforming to established standards.

Participatory Design Practices for the Survivors

In 1999, as a result of the devastating earthquakes that occurred in the north of Turkey, a cooperative formed by disaster survivors came together to initiate the "Düzce Umut Evleri" (Düzce Hope Homes) project for permanent housing construction. During this process, the Düzce Umut Atölyesi (Düzce Hope Workshop), in collaboration with Mekanda Adalet Derneği (Center for Spatial Justice) and International Cooperation in Urban Development, prepared the "Kendin Yap Kataloğu" (Do-It-Yourself Catalog), which aimed to create a participatory project and establish a livable neighborhood. The contents of this catalog included instructions for the simple implementation of urban furniture to be used in communal spaces by residents. The information is gathered from the Do-It-Yourself Catalog by Düzce Hope Workshop (Center for Spatial Justice & International Cooperation in Urban Development, 2014).

Kang et al. (2014) states that participatory design enables users to experience a feeling of possession. In our container city project, we utilized some examples from the DIY Catalog to create a sense of ownership by forming a participatory organization and to ensure that disaster survivors feel productive and well.

We took some small initiatives to create a sustainable form of living, for instance by using solar panels for electricity atop the containers, establishing areas such as small fields for the survivors to grow vegetables for themselves.

Furthermore, we conducted research on sample projects, which varied between 6 months to 2 years, concerning the future use of these container cities which would be initially structured as temporary housing units. Istanbul 29 Mayıs University Elmalıkent Male Student Dormitory, which was constructed as a quick response to the urgent accommodation needs of students but in a way that they could be repurposed in the future, can be cited as an important example to this sustainable approach (Figure 9). After disaster survivors' transition from container cities to permanent settlement units, the units in these areas are envisaged to be transformed for various purposes, such as student dormitories, social activity areas for neighborhoods,

libraries, classrooms for extracurricular courses, and tutoring centers, among others.

Figure 9: İstanbul 29 Mayıs University Elmalıkent male student dormitory. Photo: Arkiv

Graphic Concept

Within our design practice at I-AM, spatial design is approached with a comprehensive strategy that encompasses not only interior architecture but also takes into consideration brand communication. In this regard, we articulated a deliberate graphic approach for the project at hand (Figure 10).

Figure 10: Graphic Concept. Image: I-AM.

We acquired an interesting insight from the existing literature we reviewed: naming temporary post-earthquake housing areas after the regions that the survivors had previously called home evokes a profound sense of belonging among the residents. Consequently, our nomenclature for the container neighborhoods was thoughtfully crafted in alignment with this insight.

Furthermore, we noted a crucial yet often overlooked aspect in the layout of container cities and tent cities: the naming of streets and container numbering. This form of naming and numbering plays a crucial role in averting the sense of disorientation and in identifying addresses within sprawling container cities composed of similar structures spread across extensive horizontal expanses. Our examination of the literature revealed a noteworthy phenomenon in existing container cities: inhabitants often take it upon themselves to define their living spaces, striving to communicate their individuality through means such as distinctive container painting. In light of these research findings, we embarked on an endeavor to transform this phenomenon into a refined graphic language. To that end, we meticulously developed an iconographic system, designed to delineate each personalized area (Figure 11). Our aspiration was to translate this designed graphic language into a pattern suitable for outdoor application.

Figure 11: Iconography for Different Modules. Image: I-AM.

In addition, recognizing the significance of supporting children during their educational and adaptational processes, we offered workshop proposals for the personalization of container tops. This personalized touch not only fosters individuality but also contributes to the educational environment.

Finally, it is noteworthy that the approach to pattern and color we have cultivated is a manifest not only in the aesthetic dimension but also plays a functional role in guiding and signposting within the community.

Conclusion

In retrospect, the Post-Disaster Container Living Units project stands as a comprehensive master plan, tailored to flexibly meet the diverse needs of different regions tackling crises. While the plan was originally designed as a pragmatic response, we need a deeper exploration of the theoretical underpinnings within the context of 'Design and Crisis.'

Design can not be seen merely as a passive participant in the narrative of crises; it is an active shaper of our response mechanisms. Through design thinking, iterative processes, and a deep understanding of human needs, designers can influence the very nature of how we address and navigate crises. This entails creating solutions that not only address the immediate impact but also foster long-term resilience, sustainability, and adaptability.

The Post-Disaster Container Living Units project, considered as a whole, is designed as a master plan that allows for the adaptation of its various modules to areas of different scales based on regional needs. In the future, the project's open-source nature is also expected to contribute to other post-disaster design projects. Moreover, the emphasis on open-source principles in our project has profound implications for the broader design community. By embracing transparency and collaboration, we aim to contribute to a collective pool of knowledge, fostering an ecosystem where lessons learned from this project can inform and enhance future post-disaster design endeavors.

Setting aside all these endeavors, we anticipate specific areas requiring attention in future projects. A significant concern revolves around ensuring the prolonged sustainability of the Post-Disaster Container Living Units. Although we have suggested that these container units, when they finish their life cycle of serving for post-disaster zones, could be utilized in various contexts, such as student dormitories as mentioned above, the environmental impact and adaptability to evolving crises require careful consideration. Another area that should definitely be addressed is the scalability of the project that raises questions about its applicability to different cultural contexts. As we look towards future crises, it becomes essential to carefully examine cultural nuances that the current design may overlook. The project's adaptability for incorporating a range of cultural practices and preferences requires diligent exploration.

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Not Another Shelter. Traps of Solutionism in Humanitarian Design

Johanna Mehl

Abstract *In this paper, the shelter—on the one hand a prerequisite or necessary infrastructure with the potential to increase the quality of life, and on the other hand, a paradigmatic example of a design fix—will be I mobilized as a discursive figure to examine the multiple imbrications of design and crisis at the intersection of activism and solutionism. My goal is to historicize the assumptions underlying design fixes by mapping the emergence of humanitarian and planetary design paradigms during the 1960s and 70s. By examining how these paradigms manifest in contemporary humanitarian design scenarios, this paper aims to frame design not as a technology for addressing crises but as an epistemology that narrates, conditions, and shapes responses to crises as well as social imaginaries.*

Author keywords *solutionism; corporate-humanitarian design; design fix; disaster relief; shelter*

Within the context of disaster relief or humanitarian design[1], the shelter as a temporary housing unit is a frequently resurfacing social design response to homelessness in cities or the displacement of people due to political conflict, war, or environmental calamity[2]. Usually, these low-tech and often co-designed living units are made with easy-to-access materials and offer immediate relief, short- or mid term housing, security, and perspective. The *AGRIshelter*, for example, was the winning project of the so-called Refugee Challenge (RC) – a design contest launched in 2015 by the international organization *What Design Can Do* (WDCD) in collaboration with the IKEA

1 "Disaster Relief" or "Humanitarian Design" are established tags to filter design projects on the popular design blog Dezeen.

2 Examples for contemporary shelter projects: Mad Housers Project https://www.madhousers.net/ – Accessed September 2023), ParaSITE by Michael Rakowitz (http://www.michaelrakowitz.com/parasite – Accessed September 2023), Tiny Homes by Lehrer Architects (https://www.lehrerarchitects.com/project/alexandria-tiny-home/ – Accessed September 2023), or Essential Homes Research Project by Norman Foster (https://normanfosterfoundation.org/?project=essential-homes-research-project – Accessed November 2023.)

Foundation (Figure 1). Presented on WDCD's website as a "solution for the shortage of refugee shelters" in the wake of the Syrian war the temporary housing unit made of wood, straw, and other biodegradable materials received a 10.000€ cash prize and the design team was invited into an "acceleration programme" to develop prototypes and business plans to realize the project.

In this paper, the shelter—on the one hand a prerequisite or necessary infrastructure with the potential to increase the quality of life, and on the other hand, a paradigmatic example of design solutionism—will serve as a fulcrum that allows me to shift between the case study of the *AGRIshelter* and emergent architecture and design paradigms of the late 1960s and 70s. My aim is to historicize some of the assumptions that have developed under the rubric of design fixes and examine the multiple imbrications of design and crisis at the intersection of activism and solutionism. I am invested in a denaturalization of the technological fix as the predominant design response to crisis and I focus on understanding the specific histories of the ideas that have shaped design and vice versa.

1. Bad World, Good Design

When asked what designers can do, if they want to help, former refugee camp director Kilian Kleinschmidt, a panelist in the talk series "Good Design for a Bad World" (Figure 2) held at the Dutch Design Week in Eindhoven 2017, responds by saying: "Certainly, don't design yet another shelter for refugees – please!" (Dezeen, 2017, 19:54-19:58) In reference to the variety of design responses—from apps to makeshift backpacks and shelters—triggered by the Syrian war in 2015, his remarks illustrate the general accusation that design in its fantasy of problem-solving is not actually fixing anything. Intimately, almost interchangeably, interwoven with problem-solving, design products for disaster relief frequently run the risk of resembling what co-panelist Rene Boer, founder of the blog *Failed Architecture*, calls "more of a gimmick than a structural solution" (Dezeen, 2017, 16:05-16:08), which not only isn't helpful, but actually harmful in the sense that gimmickry diverts from structural issues to the benefit of localized, short-term remedies.

Figure 1: "good design for a bad world trademark" Dezeen. https://www.dezeen.com/gooddesignforabadworld/ [Screenshot by Johanna Mehl]

The discussion on stage is embedded in a broader talk series on the role of design in the face of global challenges, collaboratively organized by the online magazine *Dezeen* and the Dutch Design Week, featuring panels on climate change, terrorism, forced migration, pollution, and politics. Its programmatic questions "Can design tackle the really big problems facing the world? Or is design helping to cause these problems?" (Fairs, 2018) seem to echo a familiar conundrum inscribed in imaginaries of design as an agent of social change since the late 1960s. The invocation of a "Bad World" in the title of the lecture series mirrors the proclamation of a "world problematique", a term used by The Club of Rome in the *Limits to Growth* report in 1972 to describe their contemporary global condition: "the major problems facing mankind are of such complexity and are so interrelated that traditional institutions and policies are no longer able to cope with them, nor even to come to grips with their full content" (Meadows, 1972, pp. 9–10). Coupled with Cold War insecurities and against the backdrop of the Vietnam War, publications such as the *Limits to Growth* fed into a growing understanding of the world and its perceived problems as a set of globally connected phenomena that elude reliable solution strategies. This significant shift in the Western consciousness was undergirded by the realization that technological progress had not necessarily improved life or societal togetherness, that the planet

was polluted, that resources were not endless, and that the global community was characterized by extreme social disparities.

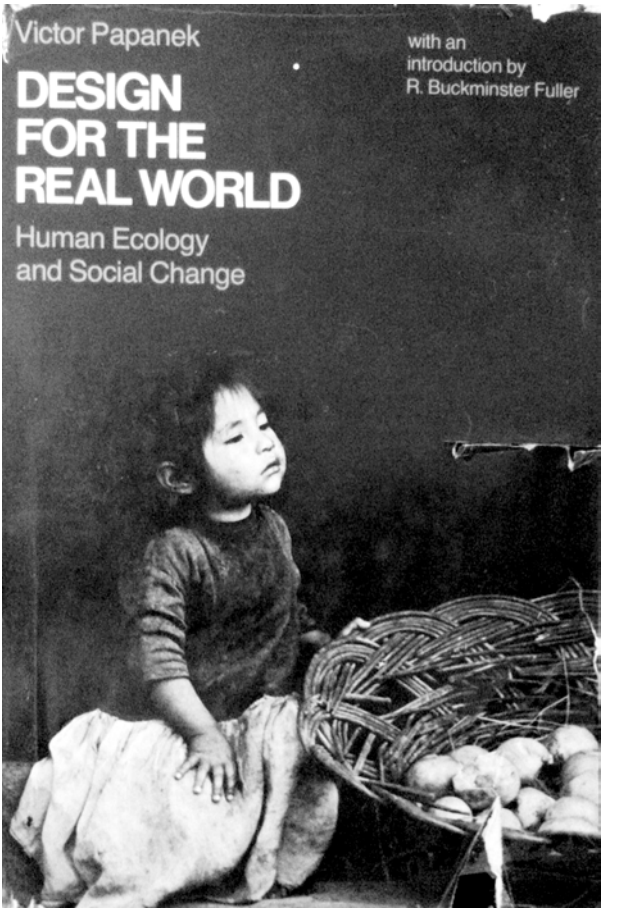
This period heralded a major paradigm shift for what *Dezeen* calls "good design" emerging as a discipline with aspirations for managing world problems to make it a better place. The discipline moved away from addressing structural, aesthetic, and client-specific concerns. Instead, it began to tackle broader issues of social policy, striving to consider global systems and redefining the client as either an individual recipient of benevolence or as "humanity" as a whole. In the aftermath of WWII, as economic disparities and environmental and urban issues in the developing world prompted increased involvement from NGOs, design and architecture professionals were included from the outset, because they were leveraged as experts on solving problems no matter the size and level of complexity. Questions of human settlement and the construction and enforcement of societal norms and values through material configurations of the environment have been, of course, fundamental to a traditional architectural and design discourse long before the 20th century. However, aid work had not traditionally been considered prestigious within the realms of architecture and design. That changed when design expanded its jurisdiction to include problems of social policy. In the following, I address the emergence of two defining design paradigms–humanitarianism and the idea of the planetary–to historically situate and interrogate some of the assumptions encoded in framing global crises in terms of institutionalized design practices.

2. The Humanitarian Paradigm

The 2017 Refugee Challenge in particular provides an opportunity to revisit the 1976 United Nations Conference Habitat, which was held in Vancouver and thematically focused on the problem of human settlements. It ran parallel to an exhibition titled "Habitat: Towards Shelter" at the Vancouver Art Gallery that showcased "shelter designs for the developing world" submitted as part of an international design competition. In a 1976 article promoting the exhibition, urban planner and architect Frederick Gutheim proclaims that

> "[…] the competition identified one major problem facing the developing countries—the squatter settlements that now comprise nearly half of the population of Third World cities. Here was a problem to which design could contribute solutions and that would give a new meaning to architecture." (Gutheim, 1976, p. 3)

Figure 2: Front cover, Victor Papanek, with an introduction by R. Buckminster Fuller, Design for the Real World: Human Ecology and Social Change, 1971, Pantheon Books.



The exhibition agenda anticipates contemporary problem-solving narratives of corporate-humanitarian design practices and was emblematic for a widespread reorientation within the architecture and design community towards aid. Following World War II, numerous design organizations emerged in collaboration with governmental, corporate, and cultural entities, such as the International Council of Societies of Industrial Design, the International Council of Graphic Design Associations, and the International Design Conference in Aspen. While these organizations played a significant role in creating paternalistic geopolitical narratives that depicted a division between wealthy, benevolent nations and poorer, develop-

ing ones, their efforts were also focused on addressing social issues such as global poverty and human settlement. Notably, the UN conference served as a catalyst for establishing architecture-focused NGOs like *Habitat for Humanity International* and, later, *Architecture for Humanity* (1999).

Against the backdrop of rising environmental and social consciousness in the 1960s, critiques began to surface in the design community that took aim at its modernist implications and industrial ties. "There are professions more harmful than industrial design, but only a very few of them", the famous opening sentence of Victor Papanek's *Designs for the Real World* (1971, p. 9), (Figure 3) is one of many quotable denunciations of design coupled with a disappointment over its tendency to first and foremost solve the problems of the already privileged (see Clarke, 2021).

The *First Things First Manifesto*, which prompted graphic designers to reorient their skills toward "worthwhile purposes" (Garland, 1964), as well as Papanek's call to employ design for "the genuine needs of man" reflect a broader commitment to transform disciplinary practice for the common good (Papanek, 1971, p. 15). This movement was anchored in the belief that "[in] this age of mass production when everything must be planned and designed, design has become the most powerful tool" that had to be deployed with "high social and moral responsibility" (Papanek, 1971, p. 102). Papanek's reimagination of industrial design under the frameworks of "basic human needs" aimed at a subversion of capitalist modes of production, not only for the "Third World", but also for post-industrial nations who needed to solve the problems of and with modern design in the post-war era (see Borgonuovo &Franceschini, 2019). His new design paradigm which proclaimed that "[d]esign must become an innovative, highly creative, cross-disciplinary tool responsive to the true needs of man" encapsulates several ideas about design in relation to global crisis (Papanek, 1971, p. x). The assumption that designers are inherently skilled at understanding third-party conditions suggests they act as detached observers, implying that when they analyze or examine issues and human needs, they do so from an external vantage point. In this scenario design is presumed an innocent practice, devoid of inherent political implications, and only becomes political when explicitly directed with intent. However, this viewpoint is problematic as it overlooks the fact that the assessment of "long-term needs" in design processes is socially, politically, and culturally situated and that design products create subjectivities and contribute to a social imaginary. Already Papanek was subjected to criticism by his peers who described his "designs for development" as a neocolonialist project and, as design historian Alison Clarke puts it, "patronizing at best, deeply harmful at worst" (Clarke, 2016, p. 47).

Yet, the core values he embodied remained fundamental to the formation of what we today view as social design. It is precisely such an understanding of designers as experts on social (and virtually any) issues that reverberates in contemporary projects like the Refugee Challenge. Indeed, in a 2016 article on *Dezeen* promoting

the #RC, WDCD founder Richard van der Laken uses a rhetoric that positions universal problem-solving as a skill unique to designers: "Daring and innovative ideas are needed to deal with the long-term needs of so many new residents in many areas of life. This is what designers are good at." (Winston, 2016)

3. The Planetary Paradigm

Shelter designs that reflected a shift toward power technologies for planetary survival include Paolo Soleri's desert home (1970), Robert Schwartz' Styrofoam dome (1964) or Steve Bear's "Zomes", all mentioned in *Design for the Real World* as demonstrations of the "elegance of solutions possible with a creative interaction of tools, materials, and processes" (Papanek, 1971, p. 13). While the dome, as the paradigmatic shape representing alternative shelter designs that proliferated in the 60s and 70s, doesn't strictly fit into the realm of humanitarian or social design, I would like to propose that the architectural expressions from this particular historical context are pertinent for comprehending how design was harnessed by non-governmental entities that rehearsed new models for organizing societies on a planetary scale[3].

In the 1960s the American countercultural movements adopted design as a small-scale, grass-roots, low-tech tool to self-organize outside of established societal settings. Propagated through publications such as Stewart Brand's *Whole Earth Catalog* (1968–1972), Lloyd Khan's *Domebook* (1971) and *Shelter* (1973), or Antfarm's *Inflatocookbook* (1971), shelter technologies such as the geodesic dome by Buckminster Fuller represented a (cost-)efficient, sustainable and versatile building strategy that was associated with technological optimism, futurism, and alternative politics. Papanek's manuals for *Nomadic Furniture* (published together with James Henessy in 1973) echo the sprouting, inflatable, recyclable, experimental, and modular shelter designs and their material symbolism as well as their Do-It-Yourself aesthetic[4]. The different versions of dome structures as well as the manuals that propelled their popularity are an example of how shelter technologies and their "vernacular" aesthetic—something that to the Western eye looked archaic and futuristic at the same time—came to represent counterculture values. These aesthetics had a firm grip

3 In her paper "The Planetary Test", historian of science Orit Halpern mobilizes Victor Papanek's writings on the "age of mass production when everything must be planned and designed" (1971, p. 9) to identify what she calls the "planetary turn in design: The reinvention of human life and habitat as an experiment, even opportunity, for design intervention and growth at terran scales." (2019, p. 14)

4 The cover headline "How to build and where to buy lightweight furniture that folds, collapses, stacks, knows down, inflates or can be thrown away and recycled. Being both a book of instruction and a catalog of access for easy moving" resonates with various experimental shelter technologies of Open Land and "Drop Out" communities.

on "real-world" sites (such as the commune "Drop City" in Colorado built in 1960) as well as the imagined futures in science fiction productions. While movies or TV series of the 1970s frequently referenced design and architectural visions of future dome dwellings, designers and architects explicitly employed science-fictional or speculative modes to sketch their visions of future habitats[5]. Even though the adoption of a fulleresque techno-oriented, imperial understanding of design seemed at odds with pressing emancipatory movements and a growing skepticism towards technology as a reinforcement of capitalist control, the technocratic designs provided by Fuller and his peers were endorsed by counter-culturalists as models for utopian, decentralized communities[6]. Design practice was emerging under the rubric of offering innovative, just, and rational models for thinking about better, global futures. Propelled by seductive aesthetic visions of dome cities and liberated communities, technological fixes became a political and aesthetic paradigm for an imagined shift towards a more democratic and participatory society. While the point is not to unambiguously declare the shelter technologies of the 1970s as predecessor models of the *AGRIshelter*, I argue that they stand for a specific understanding of "what design can do" that anticipates contemporary declarations of the "problem-solving power of design" (What Design Can Do, 2021) to create more just and sustainable futures while assuming a key position in tackling global crisis.

4. More Problems Contained

The design fixes realized under the umbrella of the RC unwittingly participate in a distraction from the systemic causes of migration and global precarity while they scope out an idea of what design can offer. Arguably, suggesting that an increase of migration flows must be met with a new range of design products diverts from the socio-economic, political, cultural, and deeply historical conditions that force refugees to flee their home countries and seek asylum in the first place. This is partly

5 SF movies that feature domes are, for example: 2001: A Space Odyssey (Stanley Kubrick, 1968); Silent Running (Douglas Trumbull, 1972); Logan's Run (Michael Anderson, 1976). From the late 1960s through the 1970s, architect and design "radicals" produced experimental, anti-establishment, speculative architectural plans, mappings, as well as interior designs and objects. Among the most renowned proponents of science fictional approaches were Italian designers and architects (Archizoom, Superstudio, and Studio Alchimia), but also British groups such as Archigram or American groups such as Antfarm produced speculative works connected to widespread movement of alternative, fantastical, and experimental practices as instruments of cultural critique.

6 For an account of the entangled legacies of counter culture, design, and the military-industrial complex that contributed to the development of digital technology and digital utopianism, see for example Turner 2006.

a matter of how problems are framed for and by designers within humanitarian-corporate operations[7]. The *AGRIshelter* is marketed to solve the problem of a "lack of temporary housing", a formulation that constructs a specific narrative of the "refugee crisis" so that product design is able to offer a compelling solution. It operates as a non-governmental regulating force and is seductive in its aesthetic. The images of biodegradable, smooth and clean dwellings tell a story of being displaced that circumnavigates war, the (infra)structural violence of refugee camps, or political persecution. By making a problem of social policy a design problem, then, it becomes compartmentalized and decoupled from larger historical, political, and social processes. Or vice versa: To think of global crises in terms of design is connected to institutionalized procedures of managing sub-problems and diverts from the conditions that – in this example – force people out of their homes.

The RC illustrates how the portrayal of designers as universal problem-solvers needs to be considered in the context of a Western gaze that is inextricably linked to the historiography of design. By proclaiming to meet the needs of people on the move, the #RC constructs a specific imaginary of refugees in the process. Within the corporate language frame of the design challenge, refugees are portrayed as a user group with specific needs that are in turn conditioned by the limits of the product they are matched with. In the panel discussion mentioned above, Kleinschmidt argues that refugee-specific products, such as shelters, dehumanize refugees while at the same time produce them as objects perpetually in crisis. They are "not a species," he reminds the audience, "so, there is no need of tech for refugees, of design for refugees, of architecture for refugees [sic!]" (Dezeen, 2017, 01:35-01:43). In an essay on the soft power[8] of humanitarian design movements, political scientist and Black Studies scholar Cedric Johnson argues that within this kind of relation between the designer and the designed-*for*, "the global poor are construed as objects of

7 In their book *Design Justice,* Sasha Costanza-Choc suggests that institutions frame "problems for designers to solve in ways that systematically invisibilize structural inequality" (2021, p. 121). A similar conclusion is drawn by ethnographer Tim Seitz, who published a study of so-called Design Thinking processes that undergird the development of products, systems, and services within business and social innovation contexts: "Design thinking is made visible as a laboratory practice that can only take place in specific environments. […] I argue that design thinking does not actually generate information about end users and their problems. Instead, it constructs specific imaginations of people and their problems in such a way that design thinking can offer convincing solutions." (Seitz 2017, p. 45)

8 The term "soft power" is introduced by political scientist Joseph Nye in his book *Bound to Lead: The Changing Nature of American Power* (1990) and further developed as a concept in *Soft Power: The Means to Success in World* Politics (2005): "What is soft power? It is the ability to get what you want through attraction rather than coercion or payments. It arises from the attractiveness of a country's culture, political ideals, and policies" (Nye, 2005, p. 6).

elite benevolence and non-profit largesse, rather than as historical subjects possessing their own unique worldviews, interests, and notions of progress" (Johnson, 2011, p. 448). The proclamation of a "temporary housing problem" weighs especially heavy when we consider that displacement in most cases is anything but temporary. According to the website of the United Nations High Commissioner for Refugees (UNHCR), also known as the UN Refugee Agency "refugees may spend years and even decades living in camps and it is common to have entire generations growing up in the camps." Following Kleinschmidt, the logic underlying temporary settlements suggests that a refugee is only legible and therefore supportable if they eventually return home.

In 2016, design scholar Ruben Pater published an article heavily criticizing the WDCD Refugee Challenge for the framing of a humanitarian crisis as a design challenge. One of his main arguments is that they propagate neoliberal ideology in suggesting that the "free market is much better at solving the world's crises than governments are" (Pater, 2016). The idea of global challenges being "too big for governments and NGOs alone" aligns with a handover of public services to the private sector (Pater, 2016)[9], a process that culminates for example in the privatization of border control through companies like Frontex. The nature of the competition further shifts the focus from the group of people the design is *for* to the group of people the design is *from*. "Who can build the best shelter?" is the question that moves into the center while the racial biopolitics and systemic dependencies of the settlements that house these shelters fade into the background. This shift of focus is reflected in a jury statement about the winning shelter design: "There is a little utopian thinking revealed in this project," they commented, potentially referencing its claim to be ab le to prevent the formation of ghettos, "but that's a whole lot better than a 'dystopia'" (Agrishelter, 2021). This kind of framing suggests that the criteria against which the competing products are measured are not only pertinence or suitability, but also the construction of favorable narratives. Again, the RC renders the question of whose agency is centered ambiguous. The hashtag "#RefugeeChallenge" that contestants were instructed to use to share their designs on social media is a good example of how design responses to crises are embedded in corporate structures that capitalize on catastrophes. Unlike #MeToo, which was used by survivors of sexual assault to share their own first-hand experiences, the hashtag #RefugeeChallenge centers an externally imposed narrative that significantly downplays the suffering and trauma that comes with displacement and sidelines the lived experiences, backgrounds, and stories of refugees.

9 A shortened version of his article was published on *Dezeen*. Many of his arguments are echoed in this paper.

5. Shelter-Making = World-Making

The shelter as a discursive anchor helps trace contested histories of socially ambitious design practices of post-industrial nations, operating within a humanitarian paradigm as non-governmental forces that rehearse new models for organizing societies. This paper only provides a glimpse into the potential avenues of examining the histories and intersections of design and aid to posit that humanitarian design's response-ability is contextually dependent, subject to change, and subject to debate and that the ways we are trained to design for crisis are historically contingent and traceable. I mobilized different shelters to map out the emergence of a humanitarian and planetary design paradigm in the 1960s and 70s to understand the underlying and encoded assumptions about design in times of crisis today.

In this way, this paper understands design less as a technology that tackles crisis, but rather as an epistemology that narrates and conditions response-abilities to crisis, because shelter-making is always world-making in the sense that it encapsulates geopolitical narratives and shapes social imaginaries. Design practices that increase the literacy of the convoluted worlds beyond the shelter could contribute to forming new humanitarian and planetary paradigms, which don't prompt designers to come up with fixes, but takes seriously the uneasy and ambiguous histories, imaginaries, and political undercurrents of what is perceived as a design problem.

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Gendered Design for Gendered Crisis: Women's Experiences in Public Transport

Pınar Kaygan, & Harun Kaygan

Abstract *This paper presents findings from a research project that investigates the link between the design of public transport and women passengers' experiences of (risk of) sexual harassment. Sexual harassment in public transport is a particularly important topic to explore as a crisis situation, since women face sexual harassment widely while using public transport both in the contexts of the Global South and North. In the project, in-depth investigation of women's experiences via interviews was followed by an explorative design process, where designers responded to users' problems as well as strategies in their design proposals. The process had a participatory nature with the involvement of an urban planner, a member of a local feminist organisation as well as the reflections of a design manager from a leading bus manufacturing company. Drawing on multiple data sources elicited from designer and non-designer participants, this paper pulls together different parties' perspectives on the role of design in the solution of a gender-related social problem. Overall, the paper invites designers to explore the potential links between structural change and design applications in industry, making product design instrumental to policy planning and implementation for egalitarian and safe public transport.*

Author keywords *design; gender; public transport; vehicle design; design for gender equity*

1. Introduction

Following the increasing popularity of a social turn in design research and education in the last two decades, social design projects have tackled issues on sustainability, citizen empowerment, good governance, among others (Tromp & Vial, 2023). Gender issues, especially as a feminist goal, however, have rarely been located at the centre of these projects. This paper aims to redress this gap by presenting findings from our GENCOM (Gendered Commutes) project, where we investigated the link between the design of public transport vehicles and women passengers' experiences of (risk of) sexual harassment. Women face sexual harassment widely while using public transport over the world, as demonstrated by studies from Latin America, Eu-

rope, Southern Asia, North America and Middle East (Ramboll Smart Mobility, 2021; Drăguțescu et al., 2020; Arjmand, 2017; Gardner et al., 2017; Madan and Nalla, 2016; Kash, 2020; Loukaitou-Sideris, 2016; Tandoğan & Şimşek İlhan, 2016). These studies report several common concerns regarding harassment in overcrowded and empty vehicles, bus stops and stations, and as women walk through pedestrian subways, bridges, desolated buildings, quiet streets and roads, and empty parks, especially at night and after dark. Sexual harassment in public transport is experienced in several ways, from non-contact forms of harassment, both verbal and visual, such as sexual comments, intrusive questions, staring, and exhibitionism, to physical forms of harassment, which include groping, sexual rubbing and other forms of inappropriate touching (Madan & Nalla, 2016; Ceccato & Paz, 2017). Non-contact forms constitute the majority of harassment incidents, yet physical harassment is also experienced frequently inside the vehicles, especially when they are crowded. For many women, harassment while using public transport is a daily occurrence in both the Global South and North, and the concerns caused by the risk of exposure to sexual harassment influence women's mobility-related choices such as route and travel duration, thus limiting women's freedom of movement (Allen, 2018). Many women avoid travelling alone at night, and when they have to, they tend to choose the transport mode that provides the most direct link to home, such as taxi. For self-protection, they adopt several strategies, such as changing clothes; adopting unapproachable expressions; travelling with others; showing verbal and physical resistance; and reporting to authorities and police (Lea, D'Silva & Asok, 2017; Quinones, 2020). The recent report by Ramboll Smart Mobility (2021, p. 33) identifies the strategies that women utilise in Germany when they use public transport at night as "walking with their keys visible in their hand to make potential attackers think that they live in the area, sticking the keys between the fingers so it can act like a weapon or pretending to be talking on the phone while walking alone." Inside the bus, strategies include sitting close to the driver, so that women can avoid getting bothered by male passengers and ask for help from the driver if they feel any risks.

In GENCOM project, we focused on Ankara, the capital city of Turkey, where hundreds of sexual harassment cases in public transport are reported each year (Durmuş, 2013; Hanözü et al., 2015). The project explored how and to what extent the gender-related problems experienced by women passengers could be addressed as design problems. We first conducted interviews with 32 women transit users, where we explored women's interactions with the vehicle interiors as passengers, especially how the vehicle mediated their interactions with others. We asked about their travel routines, and how they described the experience of 'being a woman' on public transport. While we deliberately avoided mentioning harassment or safety, these issues still dominated our participants' accounts. Analysing the interviews, we focused on their preferences and concerns regarding the interactions afforded by the vehicle interiors, and the strategies via which women took advantage of the

social and material affordances in the environment to prepare for, avoid and react to perceived dangers.

The interview findings were discussed in a previous journal article (Kaygan, Kaygan & Özgür Keysan 2023), and are summarised in the next section. In this paper we focus on the second stage of the project, where we ran a series of explorative design activities addressing these findings. We invited four industrial designers with diverse expertise to incorporate users' problems as well as coping strategies into their design practices from a critical gender perspective. The activities had a participatory nature with the involvement of an urban planner, a member of a local feminist organisation, and the reflections of a design manager from a leading bus manufacturing company. Drawing on multiple data sources, including 12 design proposals, a workshop, a focus group meeting, the designers' reflexive diaries, and an interview with a design manager, the paper intends to pull together different parties' perspectives on the role of design in the solution of a gender-related social problem.

Design is a cultural and material practice that shapes the ways we live with social consequences. In this paper we consider gender-based threats to women's safety and wellbeing on public mobility environments as a gendered crisis that restricts their freedom of movement, since mobility is a fundamental human need that constitutes the prerequisite to the enjoyment of human rights, including access to health, education, work, and leisure (Martínez, Maldonado & Schönsteiner, 2023). Although the above-summarised common challenges women face in mobility are well-documented by extensive research in fields of urban planning, mobility, gender studies, gender-responsive solutions to mobility are still in their infancy over the world. As the GENCOM project required us to engage in the topic of public transportation from the perspective of both social research and transport industry, we observed a lack of dialogue between the two: the former often concludes with implications for policymaking, while the latter is concerned with developing more effective solutions to improve products' technical aspects. This paper bridges this gap, suggesting that a nuanced and full understanding of this multi-dimensional mobility crisis, which has so far remained a topic in the agenda of social science researchers and policymakers, requires the involvement of design practitioners and industry, who shape the socio-technical mobility environments where this crisis takes place.

2. Vehicle Design and Sexual Harassment as Gendered Crisis in Public Transport

The first stage of the project showed that public transport vehicles are designed with gender-blind scripts (Akrich, 1992). We identified two main themes: physical contact and lines of sight. Firstly, women experience that the interiors afford unsolicited, sometimes inappropriate physical contact when taken advantage by perpetrators.

The affordances include the placement and proximity of seats, blind spots in the sitting plan, underdefined large spaces for standing, and shared handles. Most sexual assaults occur in the ambiguous environment created by crowded vehicles during peak hours, where lack of space provides opportunities for inappropriate touch, especially rubbing and groping. These assaults rely on the self-doubt of the victims as well as the onlookers: "Did he really touch me/her, or was it by accident?" Secondly, how the interior space distributes visibility inside the vehicle matters, because blind spots created by crowds or by isolated sitting arrangements afford harassment. Similarly, high visibility and the unwanted attention it brings were also matters of concern. For example, seats placed along the vehicle facing the corridor, face-to-face seats, and lack of external scenery in the underground make it difficult for passengers to avoid eye contact (Kaygan, Kaygan & Özgür Keysan 2023).

As women assess the risks afforded by various designed elements on the vehicle, they develop their own strategies to navigate the interior space and establish their personal space. For this, they choose where to sit and stand deliberately. They prefer single seats, window seats, higher seats, seats distanced from individuals or groups of men that they perceive as a threat, especially at night. They prefer standing with their back against the wall or the window and/or watching outside to avoid lines of sight. Women also adopt exit strategies, making use of their personal ICTs, especially mobile phones, to make themselves unavailable in the vehicle, or to share their current location with acquaintances when they feel under risk (Kaygan, Kaygan & Özgür Keysan, 2023).

3. Design Activities

The project originally included a design intervention workshop, where design students would be brought together with stakeholders. Due to Covid-19 pandemic restrictions, the plan was revised to involve four experienced designers, who worked remotely to develop ideas for design interventions. We also included experts from academy, industry, and a women's organisation in the workshop to discuss our interview findings. Design intervention activities were organised as follows:

A. **Problem exploration workshop:** The project team, four designers and experts came together at an online meeting. The team made a presentation on the interview findings. Then, experts were invited to comment on the findings. This was followed by an open discussion with the designers.
B. **Design process:** After the workshop, each designer worked individually to reframe the design problem and develop ideas for three design interventions. They were asked to reflect on their experiences, and document their thoughts, rea-

soning and feelings about dealing with a social rather than a technical problem through design in a diary.

C. **Focus group meeting:** The project team and the designers met online for a focus group interview. While the diaries already provided individual reflections, the focus group triggered a collective discussion on designing for a gendered problem, in other words, on "gendered design" from a professional point of view.
D. **Opportunity exploration meeting with industry:** The project team arranged an online meeting with the design manager of a leading bus manufacturer company to discuss opportunities and approaches for transferring the knowledge produced in the project into practice.

Perspectives on design interventions perceived by the stakeholders

One of the experts that participated in the problem exploration workshop was a social science researcher, who was also a member of a local feminist organisation and had an editorial role in a local newspaper that focuses on Ankara's problems from a critical angle (Participant A). From the outset she presented a strong position regarding design's potential role vis-à-vis the problems we identified. From her perspective, sexual harassment in public transport is not a problem to be solved by designing vehicles differently, since it is an outcome and expression of systemic gender inequalities. Such a structural issue can only be dealt with via persistent law- and policymaking and implementation. However, she added that design could play a mitigating role by reducing risks in the vehicle, and through creating an overall awareness regarding the problem, until the structural inequalities that reinforce gender-based violence are tackled effectively. She expressed worries that if the problem is formulated as "women users' different needs", this could support conservative tendencies for gender-segregation, e.g. in public transport. Another participant, an urban planner and design educator (Participant B) accordingly suggested that if generating a comprehensive solution to the given problem is beyond the capabilities of design practice, then designers should exploit intervention opportunities where they can contribute to a larger solution. This, he argued, called for a critical and reflexive design practice.

The design manager (Participant C) argued that product design and development in the transport industry is led by customer demands, therefore user-centred design is difficult to implement, let alone considerations of social issues. Public transport design relies on solving technical problems formalised as technical specifications provided by customers, as in bidding documents provided by municipalities. Consequently, the unsolicited interactions during transit should first be acknowledged as a vehicle-related problem by the stakeholders who make the purchasing decisions for the vehicles, in this case not the passengers or drivers but the municipalities, in order for the industry to consider it a viable design problem.

His analogy was the European Accessibility Act, which made wheelchair access a requirement as part of technical specifications provided by municipalities, which in turn led to a significant redesign of the buses.

Design proposals developed by the four designers demonstrated that a shift from gender-blind to gender-responsive design could lead to various solutions that might help reduce the ambiguity of underdefined spaces and thus help individual passengers delineate their personal spaces better, or more generally create a basic awareness of personal space inside the vehicles. Figure 1 shows a design proposal in which a curved holding bar can provide each passenger their own handle, eliminating anxieties about unsolicited touch. Figure 2 demonstrates another holding bar design that helps separate standing and sitting passengers.

Another designer proposed dividers that create a series of standing spaces inside the vehicles, responding to our research findings that women prefer to stand with their back against a corner to feel safer (Figure 3).

Figure 1: Holding bar for multiple users by Tuğçe Sönmez Evin

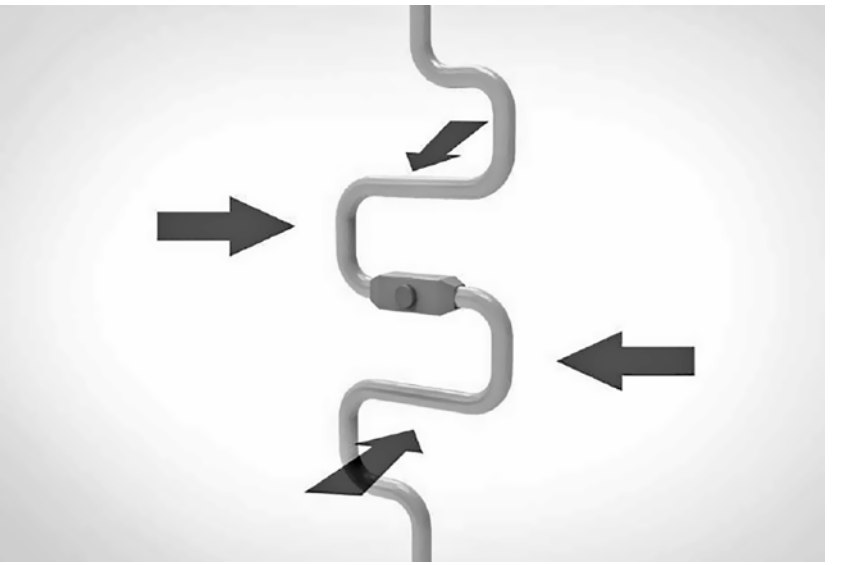


Figure 2: Holding bar next to seats by Tuğçe Sönmez Evin

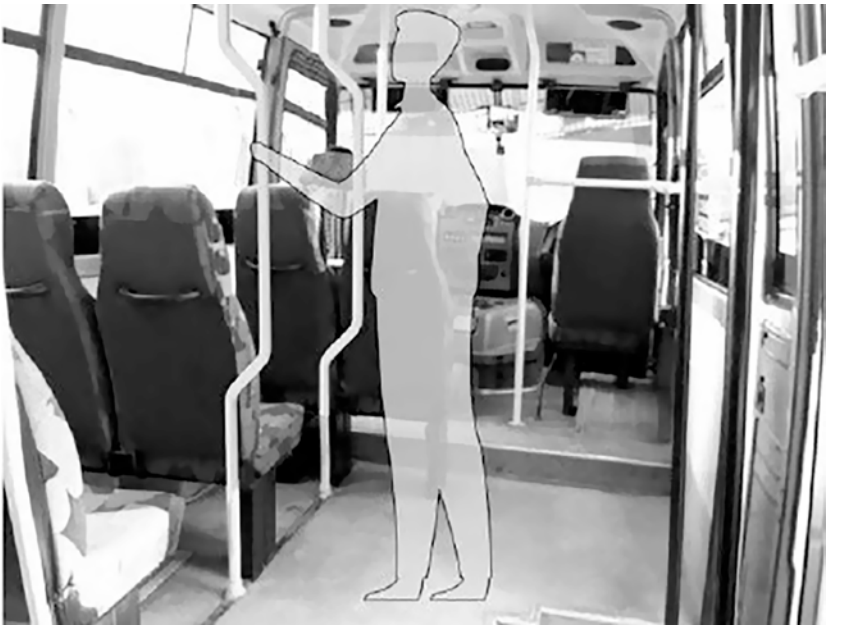
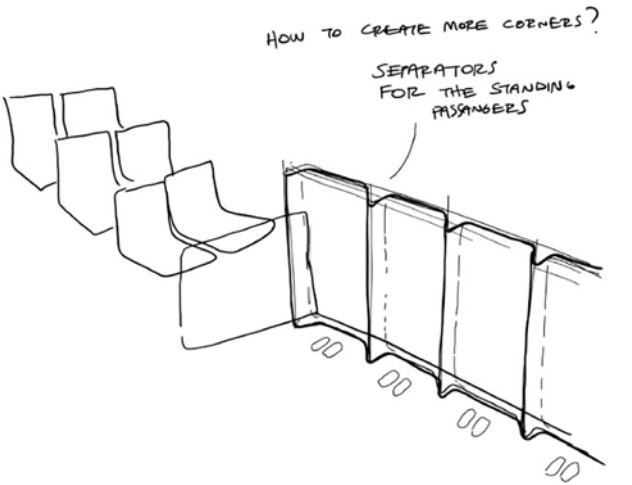
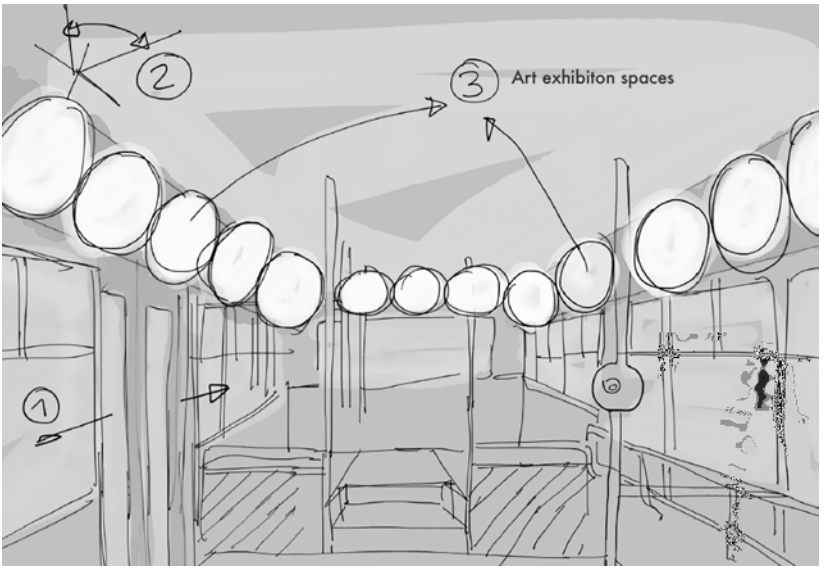


Figure 3: Corners for standing passengers by Berk İlhan



Designers also addressed issues related to ambiguity as issues caused by the distribution of lines of sight. Some proposals offered designated surfaces for passengers to stare at, i.e. screens or posters, so as to avoid unwanted eye contact and any anxiety this causes during travel. Figure 4 shows a solution where such screens are used to exhibit digital artwork in collaboration with local artists and municipality.

Figure 4: Screens to stare at by Cansu Bezmez



The focus group discussion revealed that, although designers presented several design ideas that responded to our brief, they were not entirely convinced by the effectiveness of incorporating gender considerations into the design of vehicle interiors. This was in line with their diary entries commenting on the difficulty of the task. The focus group collectively made a distinction between (1) immediate design interventions in a crisis situation, i.e. gender-responsive design of vehicle interiors, and (2) collaborative multi-stakeholder design approaches that should be deployed in public sector with an eye to proposing long-term, structural solutions to social problems, as represented by design approaches such as systemic design, community design and policy design. Within this distinction, they created a hierarchy between the two, valuing the latter over the former. As one designer summed up at the end of the focus group, they arrived at a consensus that "[sexual harassment in public transport] is not the bus' fault", so it cannot be overcome by any changes in the vehicle interiors.

4. Concluding Discussion

We agree with our participants, both the designers and the experts, that structural problems need policy-level solutions. Novel approaches such as transition design have been striving to formulate ways for designers to approach structural issues (Irwin, 2018), while in design for sustainability, there is a history of increased emphasis in system-level interventions at the expense of product-level solutions (Ceschin & Gaziulusoy, 2016). However, as Dore (2022) argues and other participatory design researchers have shown (Palmås & Von Busch, 2015; Huybrechts et al., 2017; Kaethler et al., 2017), relying on institutional frames in the face of structural problems, in this case gender equity, can mask the political terrain. In Dore's fieldwork, such frames could be challenged "through multi-level tactics that mobilized actors beyond the state's framework" (2022, p. 41). In our case, these are represented by the community actors as well as the transport industry, all of which are in the fabric of the social relations that make up the institutional relations. Furthermore, an overemphasis on social structure undermines the agency as well as the immediacy of designed everyday products that mediate the social relations between people in a crisis situation. In other words, we find value in the capacity of industrial design of mobility products as a relevant approach for responding to social problems and crises, in so far as it is realised through a multi-stakeholder lens: our interview with the design manager from the industry encouraged us to suggest that designers can and should develop strategic alliances with not only local governments, civil societies, and communities, but also with the industry, where the social and political implications of design are veiled under both the matter-of-factness of technical specifications and seemingly unbreachable economic constraints. Moreover, although new kinds of design activities have gradually been gaining prominence in the public sector, organising and managing design in public sector have their own challenges caused by the highly varying design-maturity levels of different units as well as the lack of a shared understanding of design among various actors including designers, managers and civil servants (Hyysalo et al., 2023).

This paper invites design researchers, practitioners and educators to explore the potential links between design applications in industry and structural change, *making product design instrumental to policy planning and implementation for egalitarian and safe public transport*. As we attested in previous work (Kaygan, Kaygan & Özgür Keysan, 2023; Kaygan, Kaygan & Demir, 2019) like other scholars in the field of feminist technology studies (see for example, Oudshoorn, Saetnan & Lie, 2002; Aaltojärvi, 2012; van Oost, 2003; Rommes, Bos & Geerdink, 2011), products embody and convey gender relations—even when they are designed for the use of 'everyone' as in the case of public transport vehicles. This is because products are gendered by design, often in the ways that conform to and reinforce the normative gender roles in society, through the inscription of uncritical user representations into

the materiality of products. Gender-blind products, taking their places in social life for the use of 'everyone', then, play an important role in the maintenance of gender inequities by affording interactions that put certain gender identities into a disadvantaged position. Thus, we believe that products can also be designed in gender-responsive, even -transformative ways, to address gender issues that occur in the actual use contexts and the interactions between users.

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How does Facilitating Relations between Generations Prevent Urban Isolation? The Response of Intergenerational Cohousing through Prospective Solidarity Design

Thomas Watkin

Abstract *Solidarity-based intergenerational homesharing (SIH) opens up new possibilities for older people faced with isolation and the quest for social recognition, to live differently, in a spirit of solidarity, conviviality, and togetherness. Our contribution aims to explore the convivial and supportive dimension of intergenerational homesharing based on a project-grounded research structured around several parallel surveys and social design dynamics. It argues for a prospective solidarity approach.*

Author keywords *housing; intergenerational; solidarity; codesign; foresight*

1. Introduction

Solidarity-based intergenerational homesharing (SIH) opens up new possibilities for older people faced with isolation and the quest for social recognition, to live differently, in a spirit of solidarity, conviviality, and togetherness. It offers solutions for an elderly person, generally a young retiree who is still active, to live with a young person who needs a moderate rent that can provide financial support without generating an income. The contract between the cohabitants established by the non-profit organization builds on behavioral and domestic arrangements for sharing a living space, respecting privacy, and promoting mutual aid without it being a constraint.

The SIH is part of a wider framework of housing and intergenerational initiatives for older people (Gauneau, Labardèche, & Tapie, 2022), which in particular focus on forms of housing that generate and facilitate intergenerational links. In addition to the phenomenon of an aging population, the precariousness of youth, and the isolation experienced at a societal level accentuated recently by the COVID-19 crisis, the SIH scheme responds to the challenges of an inclusive society. Although rarely

put into perspective, SIH's ecological and sustainable aim is, first and foremost, to promote the social dimension and solidarity in line with the objectives of sustainable development (United Nations), participation, and commitment (transmission and education). In the same way, the spatial dimension and uses of cohousing results in increased compactness of the building and, therefore, leads to better-occupied housing, even presenting an alternative to monofunctionality (elderly homes or student housing) by a mix of uses (living and working) and users. Finally, there is the lasting political and organizational dimension generated by intergenerational homesharing, notably due to the presence of a third-party mediator and governance based on trust and co-responsibility. How can these two generations live together in a "sustainable" way? What are the obstacles and needs generated by such cohabitation? In social isolation and structured distancing, how can intergenerational homesharing build stronger ties and kinships between inhabitants and generations?

Our contribution aims to explore the convivial and supportive dimension of intergenerational homesharing, based on a project-grounded research (Findeli, 2015) structured around several parallel surveys: a social design approach to identify social representations and foresight, needs, and desires within cohabitation; participant observation with national and local players; and interviews with cohabitants in their homes, later complemented by photography. We begin by situating intergenerational homesharing within the broader ecology of intergenerational links (Watkin, 2022) and the structuring of associations. We will then explain the methodological approach used to enter the field, initially based on codesign workshops leading to a dozen interviews in parallel with a photographic report serving as a survey and narrative approach to space analysis, design, and intergenerationality. We will present some preliminary results of this survey of shared space.

2. The Recent Structuring of a Housing and Services Scheme

Sophie Nemoz's pioneering work in the French context on intergenerational homesharing (Nemoz, 2007; 2017) demonstrated the mechanisms of a specific housing service from a socio-anthropological perspective. The development of intergenerational homesharing in the French context can be traced back to several major events that helped to structure scattered initiatives into a real structured movement and contributed to the mobilization of civil society. Initially, the point of emergence for non-profits appeared in the 2003 heatwave leaving marks on solidarity between neighbors who, particularly in Paris, became aware of the loneliness and isolation of the elderly, swept away alone by this deadly heatwave. The associative sector woke up and got organized under the leadership of Paris Solidaire and several other Parisian organizations. Several non-profit organizations quickly set up rental intermediation services.

Now enshrined in housing regulations by the *Elan Law* (in 2018), solidarity-based intergenerational homesharing can, depending on the case of the elderly, facilitate aging with higher quality of life and autonomy at home and become part of public housing policies (on the side of the landlords). From the outset, SIH has offered two distinct formulas for providing services to young people and senior citizens: one requires the young person to be present in the evenings and is free of charge. This formula, known as "solidarity", means that the young person has to contribute a smaller share of the additional costs, while the other, known as "convivial", imposes no constraints but does require a significant occupancy allowance, which is nevertheless lower than the usual rents and the prices in the rental market for accommodating a young person. This singularity constitutes the rental intermediation service offered by some 40 organizations nationwide following the 2020 merger of the national COSI (*Cohabitation Solidaire Intergénérationnelle* / Solidarity and Intergenerational Homesharing) and LIS (*Logement Intergénérationnel Solidaire* / Intergenerational and Solidarity Housing) networks. Now known as *Cohabilis*, this large-scale national network is boosting media coverage of the scheme at the level of public policy and studies to structure a network in the same way as a housing service movement.

Thinking of intergenerational homesharing in terms of solidarity means focusing on one form of cohabitation and a solidarity mechanism within the framework of housing belonging to several forms of cohabitation (Costa, 2021). The diversity of housing typologies (shared and participative housing) in full expansion underscores the fact that intergenerational relations are being considered beyond the domestic sphere, particularly in the intra-family setting, through forms of shared housing, subletting with cohabitants, or even forms of shared co-ownership. It belongs to the field of "intermediate housing" for the elderly, i.e., a semi-collective urban form that combines sharing domestic spaces through common areas and alternatives to the more private "home." Unlike other commercial services, intergenerational homesharing offers a solidarity-based approach organized and structured by a committed local associative sector. The LIS and CoSI networks have since merged to form the Cohabilis network. Originally, such a housing movement (*Pari Solidaire*) emerged in Paris following the 2003 heatwave, bringing together a variety of initiatives. With the recent merger between LIS and CoSI, a charter connects the organizations, and a deontological and ethical framework is structured under a label for their actions, even though their establishment and presence in the territory are heterogeneous. The uneven geography of organizations at the national level corresponds to local supply and demand. They all maintain specific roots with local authorities, decentralized social actions, and professional and social circles (socio-educational, housing, health). The *Elan Law* enacted in 2018 recognizes and protects intergenerational homesharing by creating a specific contract that clarifies the rights and duties of associations and cohabitants. Social landlords, supported by the *Union Sociale pour l'Habitat*, have since

joined in the deployment of this cohabitation service by becoming partners with organizations that are experts in this field at the local level. Finally, public policies in favor of the elderly and their autonomy are leading local authorities to take notice of the proposed intergenerational homesharing service.

The recent development of Cohabilis is based on a rethinking of intergenerational homesharing that goes beyond the domestic sphere. This perspective embraces all links between generations in the home and living practices. This, in turn, is guiding organizations to redefine their intermediation services (communication, assistance and advice to communities, associative expertise on intergenerational issues, etc.). and the notion of inclusive housing and shared housing.

An ecology of cohabitation links can be noted to situate initial practices within this evolving whole. We thus propose the sketch of an "ecology" of these relationships between generations in the form of a table (Figure 1).

Figure 1: Proposal for an outline of an ecology of links between generations (Watkin, 2022).

<table>
<tr><th>Dimensions/ Scales</th><th>Social & cultural dimension</th><th>Spatial & environmental dimension</th><th>Political & organizational dimension</th></tr>
<tr><td>Domestic scale (home)</td><td>Trust
Friendship
Solidarity
Conviviality</td><td>Sharing
Respect
Intimacy</td><td>Justice</td></tr>
<tr><td>Neighborhood Scale</td><td>Otherness
Mutual help
Conviviality</td><td>Protection
Trust
Solidarity
Proximity</td><td rowspan="2">Participation
Engagement
Solidarity
Empowerment</td></tr>
<tr><td>Community / Neighborhood Scale (public space, service and facilities)</td><td colspan="2">Social mix
Access
Interaction</td></tr>
</table>

This table outlines an interpretative framework of relationships arising from this cohabitation, understood in the broadest sense. It comprises three identified levels of scale and three complementary dimensions: a social and cultural dimension, a spatial and environmental dimension, and a political and organizational (or even ethical) dimension. The choice of these dimensions stems from our study of a system in which intergenerational relations are organized, notably through the presence of an intermediary (not-for-profit organizations). The domestic scale of intergenerational homesharing "under the same roof," where pairs, families, and

organizations come together, becomes a transmission place, embodying the bond of trust and even friendship for its social dimension. On the other hand, the "urban" and "neighborhood" scales reflect a bond of commitment and solidarity as the political and organizational dimensions of this cohabitation, where all the players act. Here, we're looking at the relationship of mutual aid within pairs, the participation of organizations, and the empowerment of players through their social mission, daily practices, actions, or services. The spatial and environmental dimensions remain those of actions and relationships in space, shared uses in the domestic sphere, and the search for negotiated common space or sociability relationships in public or intermediate spaces (neighborhood, residence).

3. A Fieldwork and Survey between Design and Sociology

The investigation began in 2013 with an observation, a photographic survey of cohabitants living in Paris, accompanied by the ensemble2générations association. It continued from 2017 through a project-grounded research approach, as named in the design sciences. Based on this empirical approach to the project and stimulated by the techniques and postures of social design (Manzini, 2015), it lies at the crossroads of several approaches: research-intervention (for the researcher's posture and social mission), research-creation (for the creative dimension through design) and research-action (through the constructivist aim).

Entitled SOLIDHAGE (*SOLIDarités pour l'HAbitat entre GEnérations*) and financed by the CFPPA (*Conférence des financeurs de la prévention de la perte d'autonomie des personnes âgées*) program of the CNSA (*Caisse nationale de solidarité pour l'autonomie*), this project-grounded research (PGR) mobilized a team made up of designers, psychologists, an organizer with a cultural and youth background, and an expert in intergenerational homesharing. This project-grounded research took shape thanks to conversations and interests crossed with the Avignon-based not-for-profit organization *La Logitude*, which is deeply rooted in its local area and was looking to develop new activities, particularly in *Nîmes*. This location in the south of France is both a place of economic instability for the youth and also a destination for retirement because of its Mediterranean climate. This first phase of analysis was determined by the project dynamic, which sought to identify communication principles and tools for *La Logitude* and the non-profit world associated with intergenerational homesharing (including local policies). The process of this project-grounded research was based on co-creation workshops (codesign), public meetings, mobilization of stakeholders through public communication, and participant observation with organizations and professionals from various fields. The organization and conduct of these co-creation workshops forged relationships of trust and mutual interest between participants, which, for the design researcher, facilitates this socialization and in-

teraction (Figure 2). Two reports resulted from this project-grounded research lasting several months (between April and October 2018) delivered to the Gard department, then presented to partners at a meeting and debated with beneficiaries at a round-table in February 2020. This project-grounded research revealed the importance of local organizations in a wider circle of players (professionals, shopkeepers, services) than that explored during the workshops in Nîmes, repositioning the sociological perspective of the survey (Watkin, 2022). On the one hand, this second phase of the PGR is in line with the norms for disseminating and promoting academic research (communication, article). On the other, it is accompanied by a change in the researcher's posture towards the object. Our immersive participation in professional and associative events, a dedicated relationship to the local context of *Avignon* and *Nîmes* (through involvement in the administrative office of the *La Logitude* association), has made the investigation more interventionist vis-à-vis national and local players, supplemented by the organization of round tables and various commitments. Also, social design played a significant role in understanding such dynamics of intergenerational homesharing by engaging both the research and the researcher.

Figure 2A+2B+2C: Codesign workshops to analyze representations and projections for better communication about intergenerational homesharing (photography: Cédric Crouzy).

This more ethnographic survey favored observations of and conversations with cohabitants to understand their daily lives better and grasp their practices of intergenerational homesharing. The deployment of this method was partly due to successive confinements caused by the COVID-19 pandemic, making it difficult to organize workshops (health risks and logistical constraints). In return, this socialization and rapprochement with the "world" of intergenerational homesharing enabled us to understand the domestic practices and residential trajectories of the cohabitants', some of whom are involved in the organizations' activities. This achievement provided information on their day-to-day relationship with intergenerational ties (healthcare professionals, public life, and various activities). As an investigative device for self-presentation, interaction, and the staging of daily life, photography's dialectic articulated the aesthetic interplay of photography and documentary reporting, with interviews playing a journalistic, non-expert role (Becker, 2005).

In this case, analyzing social dynamics is not separated from projections, which brings us to our research question: How can we favor relations between generations to prevent urban isolation? Social design approaches based on project-grounded research engaged actors in what we can call a prospective solidarity design (Watkin & Catoir-Brisson, 2021) as it engages non-profits and solidarity actions into foresight. We will argue for the use of prospective solidarity design in this perspective. Workshops and later photography were used as participatory documentation, projecting the public and users into their lives. Connecting generations relates to this different look on everyday practices and to the sharing of media to make this interaction happen (giving back, exhibiting, souvenirs).

4. Negotiating Intergenerational Homesharing

Our project-grounded research on intergenerational homesharing, therefore, explores this domesticity from the inside, as close as possible to the lives of their inhabitants, cohabitants, and actors in the scheme from the associations. While Sophie Némoz's study emphasized a socio-anthropological reading of interdependence, my experience in bringing social design into project-grounded research showed me a complementary rather than interdependent relationship between cohabitants.

The sociological approach adopted in this context, influenced by pragmatism and ethnomethodology, focuses on beings and objects. Rather than studying the relationship between inhabitants, I tried to look at the human-object relationships (Latour, 1987) and, in turn, how this informed the relationship between people living together. The spatial dimension of housing, understood as the very result and condition of the relationship between an "old" and a "young" person, at the very heart of an encounter lasting several months of domesticity, calls for a look at these "everyday objects" that dress the space, shaping it and endowing it with a particular

grammar that only the cohabitants have the keys to read. This script is constructed by two and three, with the non-profit organization acting as an intermediary. However, we need to understand this more or less reciprocal, mutual, shared construction. In her study, Sophie Némoz characterizes three "ideal types" (as defined by Max Weber) of these intergenerational homes through observation and interviews with cohabitants. Drawing on the "boundary-object" notion, we have sought to account for this spatial narrative of intergenerational homesharing. Limits or boundaries in domestic space provide keys to understanding these domesticities as invisible, explicitly physical, symbolically suggested limits. As explained by Trompette & Vinck (2009), certain activities can manage the relationship and this knowledge in everyday practice.

Three dwellings have been sketched out here from the various interviews conducted and from visits to dwellings and photographs taken. This contribution is based on the types identified by Sophie Némoz in her survey: the neo-family gîte, the student hostel, and the geriatric home. During our in-home interviews, we came across the first two categories. Residential, spatial, temporal, and personal configurations are all variables that ultimately call into question the ideal-type schematization. Describing places and objects tells the story of these relationships and the activities suggested or explicitly mentioned. We'll take a closer look at three different readings of households.

Josette's house is located in Avignon, in a residential area of working-class houses. Lison, a university student, stayed for a year. The two-story house, tucked away in a cul-de-sac, hides a lush garden. Lison has been living here for a year while she waits to move into a flat-share: "Next year, I'm moving into a flat-share with a friend. Even if I leave home, I'll come back for coffee. She's also offering to let me use the garden. Josette has lived together for a long time, welcoming young people into her home for years. This has given her a habit of "knowing how to manage" her aging. 75 years old and a 19-year age difference isn't an "obstacle" to living together.

Figure 3: Photography of shared common space (copyrights: Walid Ghali).

Eliane's apartment in Nîmes, in a small tower block near the city center, is home to a young student. Yumi is staying here for a year and is doing her best to balance her student life with her personal life. She leaves the apartment as soon as she can on weekends. The low-cost accommodation gives her the financial autonomy she would not otherwise have. Eliane points out cohabitation is not a solution for her, but that it corresponds to a temporary need following the death of her husband so that she doesn't find herself alone, "but that it does not interfere too much with my life", as she explains.

A final visit is that to Pierrette and Mathis in an apartment located in the heart of Avignon. Located in a condominium complex overlooking a courtyard on the first floor, Pierrette, a 95-year-old woman with visual impairment, chose this apartment because she did not want to isolate herself. Very lively despite her handicap, she is the doyenne of La Logitude's residents. Moreover, she does not hide certain "arrangements" without calling on the organization when it is necessary to manage cohabitation.

From these visits to specific places and contexts, we note three modes of action for living together to maintain the cohabitation relationship. These modes structure the dwelling space through places, spaces, objects and their users:

- The "transfers" relate to spaces dedicated to intimate domestic practices, stabilized in their meaning and practice. Bedrooms and individual bathrooms in some apartments keep these spaces "to oneself." Certain objects become sedentary as if the elderly are trying not to move anything or to mark out their space and find landmarks corresponding to their life. During our visits, we noticed a shift from the communal space associated with the living room or "living room" to other rooms in search of greater calm. The living room then becomes a less-used space. These objects, stabilized by the host person, help the young person to find his or her bearings and recognize several elements in the other person (memory, taste, family, and social belonging). The kitchen's storage areas (cupboards, fridge) are also unambiguous spaces of shared meaning (despite storage versus conservation). In this mode of action, there is a recognition of the other.
- "Translation" refers to "objects of cognitive mediation" that enable points of view through confrontation. This is the case of the kitchen space or places the two people jointly occupy, projecting different representations and meanings. In Josette's case, a piece of entrance furniture used as decoration is appropriated by the young woman to hold a hat. A bathroom sink can, even if its use is alternated and shared between the cohabitants, become an object of discussion about body care. This example shows that there can be places that highlight this age difference. These boundary-objects or places enable recognition of others (from discomfort to acceptance, from need to renunciation). It is a question of understanding "in the other," a sense of place that can lead to forms of appropriation (positive or negative). Above all, it is also a question if the person welcomes adapting to the practices and habits of aging (e.g., the imposition of laundry in the living room). For the older adult, this invitation and welcome can be experienced as a loss of personal space, leading to withdrawal (e.g., moving to the TV corner).
- Finally, "transaction" refers to those places and objects that generate divergent interests, where negotiation and compromise are essential to cohabitation. The kitchen, where shared meals and dishes constitute a commonplace and structure the daily agenda, becomes the epicenter of negotiation. To avoid this, the carers (in two of the three case studies considered) have independent kitchens (in a laundry room or fitted out in a cubbyhole).

Visits to the apartments were an opportunity to read the domestic space, but above all, to gather information through semi-structured interviews about the life negotiated through shared use and the role played by *La Logitude* (Figure 3). The photographs do not retrace these "boundary-objects" of intergenerational home-sharing. The intermediation plays a role at the start of the relationship between the two cohabitants following shared profiles. This role continues through regular visits or when the cohabitants need support as a new and complicated situation

emerges. This mutual trust, nurtured by the organization's presence, builds conviviality through objects and spaces. On a day-to-day basis and in the apartment, La Logitude can help with this implementation by making layout suggestions and selecting apartments during preliminary visits to the living quarters. These visits enable us to check whether the apartments meet certain criteria (hygiene, upkeep, cleanliness).

In this phase, where the triad between the two cohabitants and the non-profit organization such as *La Logitude* operates, the process of seeking intimacy and recognizing the needs of others, building safeguards and frameworks were imposed but also monitored and discussed. The preliminary results of this observation, these interviews, and the photographic study and experience inevitably lead us back to the ecology of intergenerational links mentioned earlier. To what extent do spatial practices, boundary-objects, and temporalities, as clues, enable us to echo each other on other spatial scales outside the home? How can aging, often recognized as a withdrawal into oneself and a reduction in the spatial scope of relationships with one's environment, be transformed, reinforced, or emancipated by encounters with another, younger age? How does intergenerational homesharing allow new individuals to compromise practices for living with others and finding balance through this search for reciprocity? How can foresight and codesign help make the future more liveable and change our point of view and common sense of the present?

5. New Perspectives for Crisis

Inspired by the emerging phenomenon of boundary-object design, "solidarity design" stimulates, through economic and territorial solidarities, anticipation of future objects of intergenerational kinships and constructive relationships. This social sustainability through project-grounded research (PGR) introduces solidarity design as a key element for rethinking transformations and activate solidarities between participants, which foster, in our case, tensions and cognitive mediation between the elderly, younger cohabitant and domestic objects, through structured forms of emancipatory organization (Escobar, 2020). It is essential to deal with sustainability and social issues simultaneously, instead of opposing them. In this social innovation perspective, the emergence of transition design (Irwin, 2015) can build bridges with social design into a mixed approach (co-design, transition design, prospective solidarity design).

Therefore, prospective solidarity design can find possible perspectives in thinking and materialize imaginative futures through objects. The perspective given by fiction design with the "cone of futures" displays a narrative of futures to rethink boundary-objects. This perspective under experimentation through PGR using var-

ious social design tools (multiple participations, workshops, interactive photography) helps to observe existing situations and their evolution.

Finally, intergenerational homesharing responds to isolation through project-grounded research. Prospective solidarity design surveys this social dynamic and phenomenon by looking at how the domestic space shared by two individuals depends on boundary-objects *translating* the representations and meanings projected by cohabitants. Intergenerational homesharing provides sustainable relations for the elderly, particularly as the most vulnerable group of the two cohabitants despite hosting in their own house. Here, prospective solidarity design highlights this social innovation and way of living, changing cultural norms and negotiating domesticity through common objects. If living together is not new between generations, our approach shows how prospective solidarity design can anticipate action in uncertain times by focusing on the core of isolation and social vulnerability.

Statement on compliance with ethical standards

All photographs are copyrights of Walid Ghali. All photographs have authorizations for their publications. We thank La Logitude and Cohabilis for their collaboration in helping us uphold the ethical standards and rights of use of this material exposed in this article.

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Chapter 2 / Crisis, Literacies, and Practices

This Chapter explores the specific literacies, skills and knowledge that designers might need or can bring to the table in crisis situations and how designers can effectively leverage those practices to make meaningful contributions to addressing and understanding crises. This Chapter presents contributions that examine (current and future) practical approaches and methods used by designers in responding to crises from a practice-based perspective. Topics include co-design and participatory methods in crises-induced realms, design's role in the current and increasingly digital world, and the way design can react to environmental concerns.

A Toolbox for Introducing Co-design Processes in Rural Areas with Social Innovation Hosting Initiatives

Massimo Menichinelli, Denise de Spirito, Elena Elizondo Nieva, Iván Paz

Abstract *With the COVID-19 crisis, even though the phenomenon had already started before, increasingly more urban residents started to consider leaving cities and moving to or even moving back to rural areas. Young members of the creative class have particularly felt this crisis in increasingly gentrified cities with fewer work opportunities, feeling more dissatisfaction with mainstream design, economy, and society. At the same time, many rural areas have been in a state of crisis for several decades, caught between the reduction of economic opportunities, emigration, and lack of services and infrastructures. For these reasons, many rural areas have been increasingly felt as left-behind places and accordingly have protested politically. Two different worlds, each in crisis in different ways, have found a meeting point in an increasingly prevalent phenomenon of social innovation hosting initiatives that are called "Village Hosts": emerging, distributed grassroots design initiatives for social innovation, experimenting with new economic and social models while connecting these places with larger-scale networks. These are informal and grassroots design and creative practices that are slowly emerging. The objective of this paper is to investigate how design could improve the meeting of these two worlds in crisis towards experimenting with alternative futures. How could Village Hosts co-design initiatives with local rural communities? We thus present and document a co-design toolbox, developing on and recontextualizing an already existing open source toolbox already adopted by grassroots communities for policy making. In this paper we document the toolbox, its developmental process, and the relevant literature and previous practice behind it, reflecting on its contributions to design practice, literacies and research.*

Author keywords *rural areas; remote areas; sustainable tourism; co-design processes; toolbox*

1. Introduction

With the COVID-19 crisis, even though the phenomenon had already started before, increasingly more urban residents started to consider leaving cities and moving to or even moving back to rural areas. Young members of the creative class have partic-

ularly felt this crisis in increasingly gentrified cities with fewer work opportunities, feeling more dissatisfaction with mainstream design, economy, and society. At the same time, many rural areas have been in a state of crisis for several decades, caught between the reduction of economic opportunities, emigration, lack of services and infrastructures, and increasing urbanization. For these reasons, many rural areas have been increasingly felt as left-behind places and accordingly have protested politically. Two different worlds, each in crisis in different ways, have found a meeting point in an increasingly prevalent phenomenon of social innovation hosting initiatives that are called "Village Hosts": emerging, distributed grassroots design initiatives for social innovation, experimenting with new economic and social models while connecting these places with larger-scale networks (Thackara, 2022). These are informal and grassroots design and creative practices that are slowly emerging. The objective of this paper is to investigate how design could improve the meeting of these two worlds in crisis towards experimenting with alternative futures. How could Village Hosts co-design initiatives with local rural communities? We thus present and document a co-design toolbox, developing on and recontextualizing an already existing open source toolbox already adopted by grassroots communities for policy making. In this paper we document the toolbox, its developmental process, and the relevant literature and previous practice behind it, reflecting on its contributions to design practice, literacies and research.

2. Literature Review

With the COVID-19 pandemic, there emerged a small trend of migration towards rural areas, going against all prejudices about rural life (González-Leonardo et al., 2022). Many urban residents, having the choice, have opted for a remote working mode that allows them to live, where possible in terms of connectivity and digitisation, in rural areas far from the city. The reasons driving this wave include environmental sustainability, well-being and health, and social impact. Precisely related to this, many are choosing to support small businesses over large retail chains and to encourage new practices against consumerism. In addition, living in a small reality allows one to connect more with the place and practice voluntary work, community activities or new business models that help the local and social economy. With respect to health, we know that rural areas favour a close relationship with nature, agriculture and healthier food. In terms of climate change, we think about mobility and the possibility of reducing one's impact on the environment. In more remote areas, investments have been made to recruit people willing to move to these places. But these marginal and remote territories are exposed to risks that are changing over time. Analysing many rural policy reports (S.N.A.I. National Strategy for "Inner Areas"), on one side we have the 'characteristic' risks that have been investigated for

a long time—from hydrogeological instability to depopulation (Lucatelli et al., 2013); on the other side, we have the importance of controlling and directing some future trends because, if not mitigated, they could lead us to the phenomenon of 'climate asylum' towards mountainous and rural areas (Mercalli, 2023). But the greatest risk of these territories, linked to the phenomena mentioned above, is to be caught unprepared, and we already have some evidence for this, for example, with the digital divide. The gap with urbanised cities has grown strongly over time, from the digital divide to the lack of digital literacy and skills. The authors and researchers of the issue 5 (November 2021) of *TerritoriALL*[1], a journal published by EGTC ESPON dealing with EU development policies and their impact on regions, informs us that European policies are increasingly encouraging planning in rural areas, as many of these places are characterised by fragile infrastructure, few essential services and reduced socio-economic opportunities. Design, in particular design for the territory, can take several shapes: designing in the territory (focusing on the territorial distribution of design industries, their strengths and specificities), design of the territory (focusing on enhancing local cultural products, as well as environmental, historical and cultural resources) or for the territory (focusing on the role of communities in their territories and their dealings with stakeholders) (Parente & Sedini, 2017). In terms of the latter, design can also focus on the task of designing bottom-up processes that actively involve communities and stakeholders who are interested in living in these places and who want to build new forms of entrepreneurship through doing together and sharing. In fact, starting from Community-Centred Design (CCD) as an approach evolved from User-Centred Design, it is possible to build a network of exchange involving the entire community, and not the individual user, to foster local development and change (Meroni, 2008; Meroni & Manzini, 2014). Moreover, this approach to desig, can transfer the value, systems and processes of other case studies/community phenomena that have achieved positive and lasting results over time.

Time is another risk component when it comes to rural areas. Many projects, although of quality, vanish in a very short space of time. These territories, already characterized by 'exploitation' during the warmer months and 'abandonment' in the winter months, need constancy and continuity. In respect to the connection with urban centres, it is necessary to change the cultural approach and, first of all, to rethink that marginality *"is not only a state, but mainly a process (the process of marginalization) influenced by socio-economic changes that can affect a particular region either in a positive (mitigation of marginality) or negative way (deepening of marginality)"* (Máliková et al., 2016, p. 94).

Designers could thus work on supporting the meeting of these two different rural and urban worlds, each in crisis in different ways, which have found a meeting

1 https://territoriall.espon.eu/magazine/reader/222384?pageNumber=1

point in the phenomenon of social innovation hosting initiatives which are becoming more prevalent. These are, as mentioned above, emerging distributed grassroots design initiatives for social innovation, experimenting with new economic and social models while connecting these places with larger-scale networks, thus improving localities and networking them (Manzini & M'Rithaa, 2016). These initiatives use resource mapping, which is a strategy for identifying and analysing existing resources such as people, services, natural resources, and technologies. A common feature of these projects is the presence of a person who is based in the community and who identifies opportunities, connects local actors and stakeholders, and develops projects. Creative Communities (Meroni, 2007) encompass a wide range of possible initiatives and people involved, also called "professionals of the everyday", who deal with a very wide range of issues: work, food, mobility, socialisation, and learning. Through the role of the designer, new scenarios of Creative Communities can direct collective action and help develop a shared understanding that can positively influence the future, also transforming social and cultural factors. Among the many potential cases of grassroots creativity in dealing with social issues, one of the most recent cases that has emerged is the concept of the Village Host. Developed by John Thackara, Village Hosts are grassroot initiatives in rural areas that combine hospitality, tourism and positive social impact activities: "*New projects, and new livelihoods, are sprouting up among Europe's multitude of small villages. These activities range from positive-impact tourism, nature reconnection, and ecological restoration – to adventure sports, farm-shares, learning journeys, wellness retreats, heritage trails, and more […] Village Hosts seek out and connect assets that may already exist in a community – but are unknown, or isolated: people, places, buildings, and skills. They connect these neglected assets in events, services and enterprises.*" (2022). Defining the concept of Village Host is still not an easy task, as there are many different profiles that may fit into the way it is described. Village Hosts can be people who were born in the village and have always lived there, people who moved to the city to pursue their studies and have come back, or even newcomers who are moving to a particular village to start village hosting. Moreover, they can work as an individual or as a group, and village hosting can be their primary source of income or a side project. The types of initiatives they run can also vary and can be considered extensions or innovations in rural tourism, an important trend for peripheral areas (Salvatore et al., 2018): co-living and co-working spaces, art residencies, maker spaces, co-farming, eco-tourism initiatives, rural sustainable development initiatives, etc. The authors, therefore, examine the close relationship between "rural peripherality" and aspects of "tourism transition", experimenting with new processes that foster economic and community change.

The concept and profiles of Village Hosts has been addressed by the the Open School for Village Hosts (OSVH)[2] project, co-funded by the Erasmus+ Programme

2 https://www.villagehosts.eu/

of the European Union. OSVH aims at identifying the core skills that a Village Host would need to design a pilot training programme with Village Hosts from different parts of Europe and teach them these competencies via a collaboration platform to collect and publish Village Host stories, support and enable a community of knowledge exchange and provide tools for it. Finally, it also has the objective of publishing a OSVH manifesto to advocate for the work done, and a handbook for future Village Hosts. Even though the roles of Village Hosts are wide, they also share some common characteristics. The OSVH project identified five areas of competence needed to be a Village Host: (1) Envisioning and mapping opportunities; (2) mapping actors and resources; (3) storying the place; (4) making service prototypes & curating activities and outcomes; and (5) assembling cooperation platforms and designing new business models (Radošā partnerība, 2022). The second point, mapping actors and resources, implies skills such as maintaining and sustaining relationships with the local community, engaging with people and organizations, organizing community and civic participation, and outsourcing and delegating responsibilities. All these skills involve different stakeholders which village hosts must work with, using co-design processes to create an open dialogue between themselves and the rural community.

3. Methodology

Because village hosts need multi-stakeholder and community co-design and facilitation skills, within the context of OSVH, we developed a toolbox for co-designing Village Hosting initiatives fostering collaborations among village hosts and the local communities (Figure 1). One of the OSVH project's goals was the design and implementation of a training programme, which was attended by 40 participants from all over Europe and which included online training. The aforementioned pilot training programme aims to identify the range of key competencies that a Village Host could need to design yet another pilot training programme with Village Hosts from different parts of Europe to teach them said competencies. The online training took place from the 2nd of march to the 24th of April 2023, and consisted of five modules that were related to the five competence areas discussed above. The second module, titled "Map Actors and Resources", included our two sessions, called "co-designing" and "co-creation", which were held on the 21st (Village Hosts, 2023a) and 28th of March 2023 (Village Hosts, 2023b), and which were assigned to the authors. The initial goal was to support the teaching of co-design in such sessions and to provide a tool for experimenting and testing it. Considering the limited time and resources and the need for links to established frameworks and experiences to be shared with participants of the training, we decided to build the toolbox on top of an existing and open source (and thus freely reusable and modifiable) framework. As one of the authors already

worked on it in the past, we based the OSVH Co-Design Toolbox (Figure 1) on the one developed in the Horizon 2020 research project 'SISCODE, Co-design for society in innovation and science'[3], which produced a final co-design toolbox (Menichinelli et al., 2019; Real et al., 2019; Rizzo et al., 2018). SISCODE aimed at stimulating the use of co-creation methodologies in policy design, using a bottom-up co-design approach within 10 co-creation labs spread around Europe, giving policymakers the opportunity to co-design and test new and more open ways in conceiving policies that reconnects policy design with grassroots initiatives and citizens. The SISCODE Toolbox for Co-Creation Journeys supported this task while also trying to reuse existing tools and frameworks, adapted to the development of co-design journeys with existing design tools.

The initial toolbox was thus already focused on planning co-design processes while also adopting existing resources, and the OSVH toolbox proceeded in this direction, translating it from the context of policy design to the context of rural village hosts. Within this methodological framework, the OSVH toolbox wants to be an extension and sees the co-design approach and tools as a concrete response to the rural context. Furthermore, the methodology used aims to provide users with a democratic tool. In the case of OSVH, it was an inspiration to train practitioners and provide them with a toolbox to test independently, together with the different stakeholders of their rural project. In fact, the toolbox systemically but creatively involves users co-designing solutions for new forms of local entrepreneurship through a meta-design approach with the aim of helping users to analyse the data, the figures involved and the whole process. After a first version (Menichinelli & de Spirito, 2023) was designed by the authors building from the SISCODE toolbox and with tests and prototypes, the toolbox was then adopted in the online sessions, shared and discussed with participants.

3 https://siscodeproject.eu/

Figure 1: The OSVH Co-Design Toolbox.

The topics of the sessions were (a) an Introduction to Co-Design and to Community-Centred Design, (b) Co-Creation with Communities, (c) Communicating and Discussing results with communities and, finally, (d) how to Co-Design a Village Host initiative. For that, the OSVH toolbox was introduced, and the participants digitally tested it simultaneously via Miro.com. The overall feedback was positive, participants stated the need for such a tool, but asked for some refinements and for an example of application. This feedback was taken into account and a second iteration of the toolbox was designed (Menichinelli et al., 2023), which included an example of a Village Host project based on a place familiar to one of the authors. We started thinking about how a rural house in the hometown of one of the authors' in Northern Spain (Navarra) can be transformed into a point of encounter between local literature and the production of local dairy products, as we identified both as the most relevant resources at the local level. To get started and be inspired, we tried to imagine and visualize this initiative through an AI deep learning, text-to-image model, Stable Diffusion. We thus mixed both tradition and local settings with digital and innovative tools, as Village Hosts often do, by trying to represent views of the Village Hosting initiative as if it were painted by the Spanish painter Joaquín Sorolla (Figure 11). After that, we used the images and the toolbox to Co-Design a new Village Host initiative (Figure 2) developing a specific layout for using it on a wall (Figure 3).

Figure 2: Part of the design teams testing how to use the toolbox on a wall.

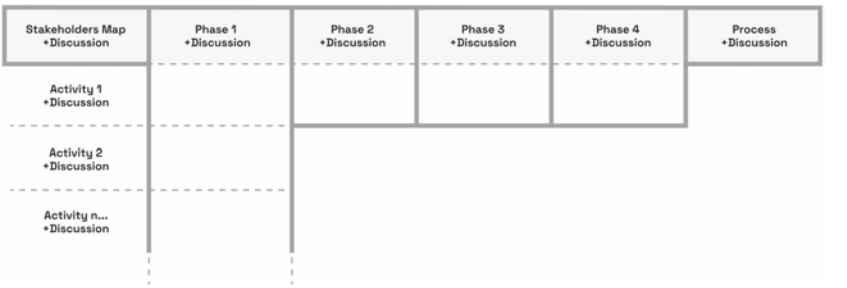
This second iteration was then uploaded to and shared with participants on the OSVH digital platform[4] and also delivered in person to the Village Host community in the second part of the OSVH training programme, which consisted of a five day in-person training in Grottole, Italy (OSVH, 2023a, 2023b). We were able to show the toolbox to the participants directly and had discussions on how to use it in each of their Village Host initiatives specifically.

4 https://platform.villagehosts.eu/

4. The OSVH Co-Design Toolbox

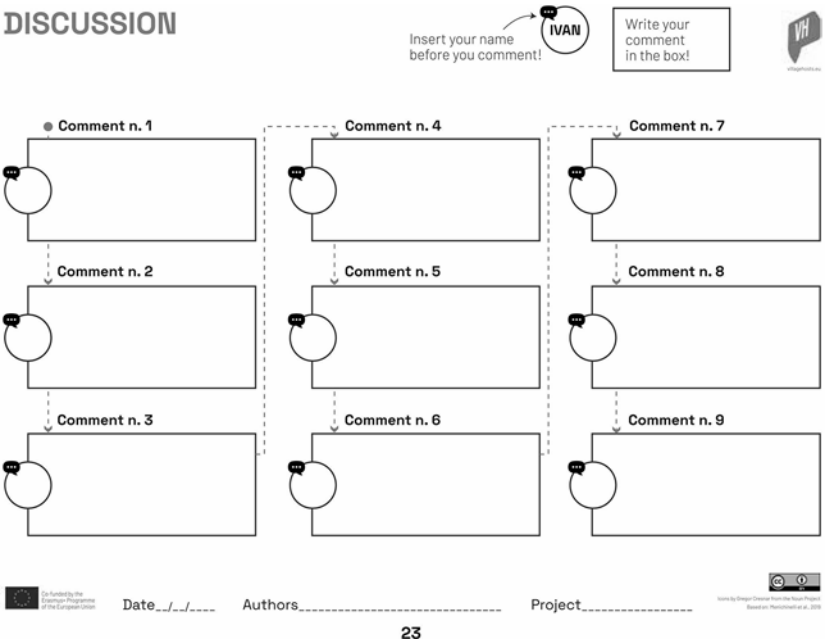
Working for and with the local communities of an area implies, among many other actions, getting to know that specific place through those who have always lived there or who have moved there for a certain time (Menichinelli, 2023). For this reason, therefore, it seemed necessary to emphasize how participatory actions, through a Community-Centred Design approach, and Co-design are essential to generate a concrete and tangible impact, achieving innovation objectives on different scales, from local to global, so that one can support the other. Here, the role of design researchers and practitioners, as a first step, lies in the creation of a toolbox as a kit to explore social innovation processes in a way that is shared with others.

Figure 3: How to use all the A4 canvases on a wall.



Co-design is a non-linear process that enables the analysis and organization of products, systems, or services. It is divided into several stages, from the analysis of resources and problems to the conception of a prototype to be tested with the help of available methods and tools. In this vision, the OSVH toolbox is a support for the organization of a community-centred co-design process for the development of Village Hosting initiatives together with local communities and larger international village hosts. The toolbox is divided into three sections (A, B and C) to enable village hosts to co-design a place-based hosting initiative based on resources, potentials, and limitations. Section A is a completely new addition to the SISCODE toolbox and customized for Village Hosting initiatives, section B extends the SISCODE toolbox and focuses on the (meta) design of the co-design process with stakeholders. Each canvas is followed by a Discussion Canvas (Figure 4), which enables participants to leave comments in a thread-like fashion about the canvas to which it is attached, as a way for leaving a lasting documentation of the co-design discussions. Section C contains an example of an application developed by the authors for testing and explaining the toolbox.

Figure 4: Section A – B: Discussion Canvas, for discussing the previous canvas to which it is attached.



Section A "Co-Designing for Village Hosting initiatives" is dedicated to identifying available or missing local resources and, consequently, to determine what a Village Hosting initiative could be based on to foster, exploit, or redevelop area-based resources. It is made up of two canvases: the Village Canvasses (Figure 5) and Hosting Canvasses (Figure 6), each with a Discussion Canvas (Figure 4). Through the Village Canvas, it is possible to analyse local cultural and social resources/initiatives, those linked to production and agriculture (local production, handicrafts, farming, livestock), infrastructure and services, geomorphological aspects, or climate-related risks. Once users understand the local context of their own activity, they can start discussing the details of their Village Hosting initiative with the Hosting Canvas: what types of activities are carried out, who and what skills are involved, the target host, what are the costs and the reference business model, and where do the activities take place. Each section of the tool includes in-depth analysis and discussion phases open to all stakeholders.

Figure 5: Section A: Village Canvas.

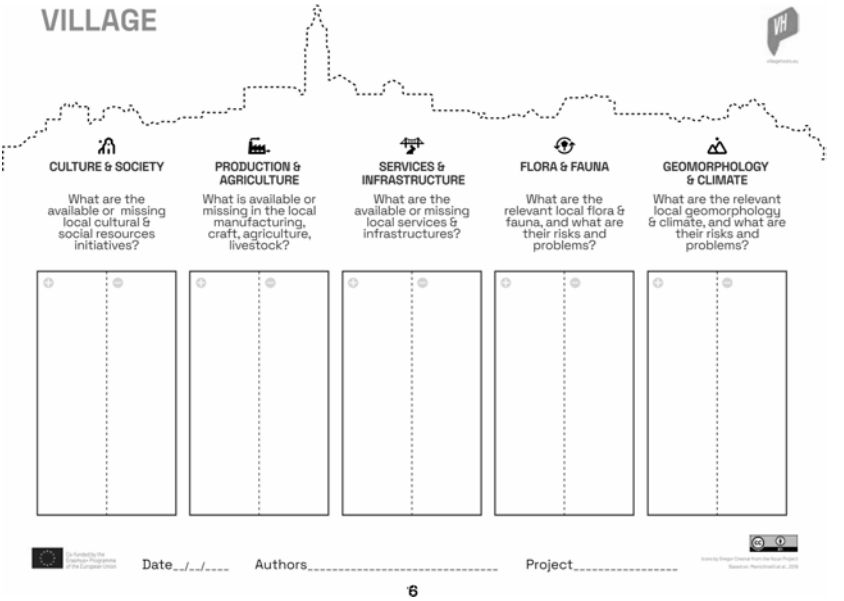
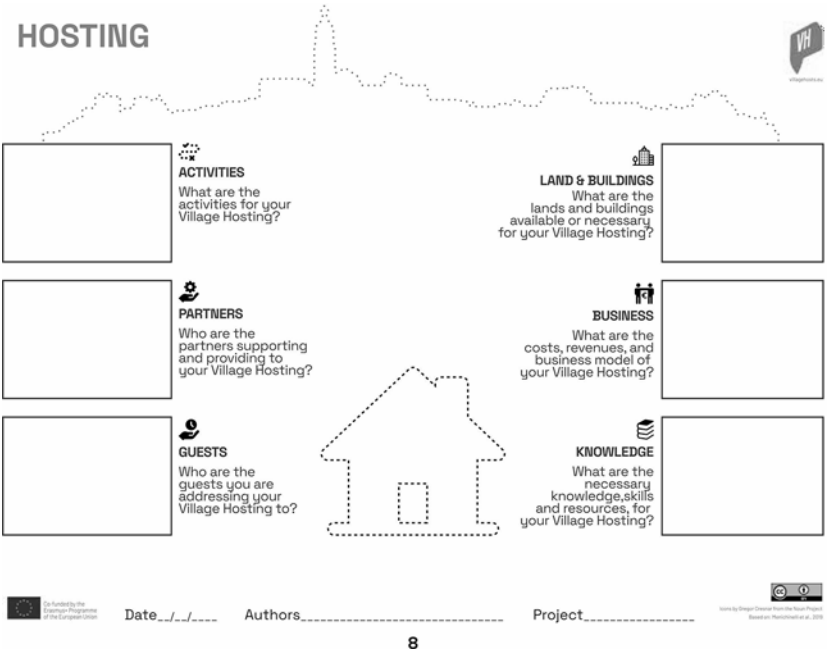


Figure 6: Section A: Hosting Canvas.



Section B "Co-Designing the co-design process" deals with organizing the overall co-design process in such a way as to use a Community-Centred meta-design approach and begins with the Stakeholder Canvas (Figure 7), a tool for understanding the partners, community, and guests and how they might be engaged in the hosting initiative ecosystem. The OSVH Toolbox proposes 4 phases with different goals and results: (1) analyse the context, (2) reframe the problem, (3) envision alternatives, (4) prototype and experiment. The Phase Canvas helps understanding each phase, making sense of the necessary inputs and outputs, how to best define the necessary activities for the accomplishment of each phase, and how to manage them (Figure 8). For each phase of the co-design process, different activities could be realized according to one's context: the Activity Canvas helps find the appropriate tools and discuss how to organize every activity (Figure 9). Finally, the Process Canvas (Figure 10) lets users organize all the activities within a time range from 1 to 12 months (users print and use more canvases if necessary to extend the number of activities or the number of months).

Figure 7: Section B: Stakeholder Canvas.

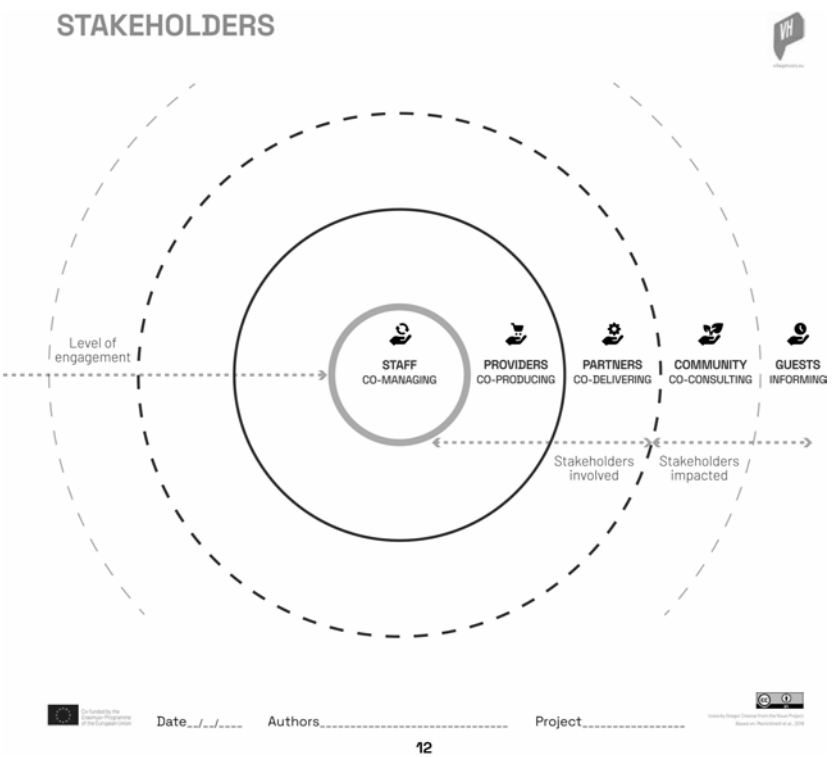


Figure 8: Section B: Phase Canvas.

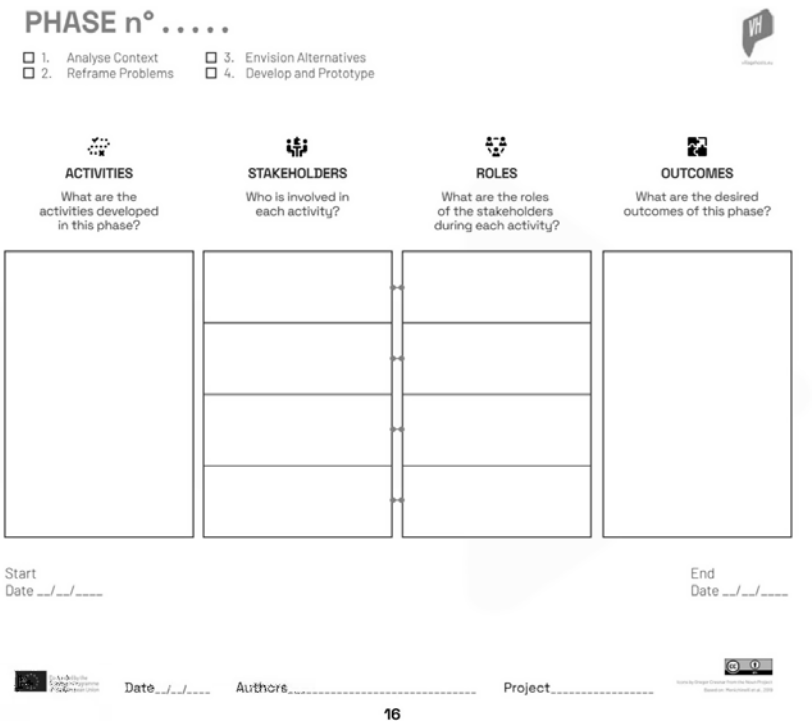


Figure 9: Section B: Activity Canvas.

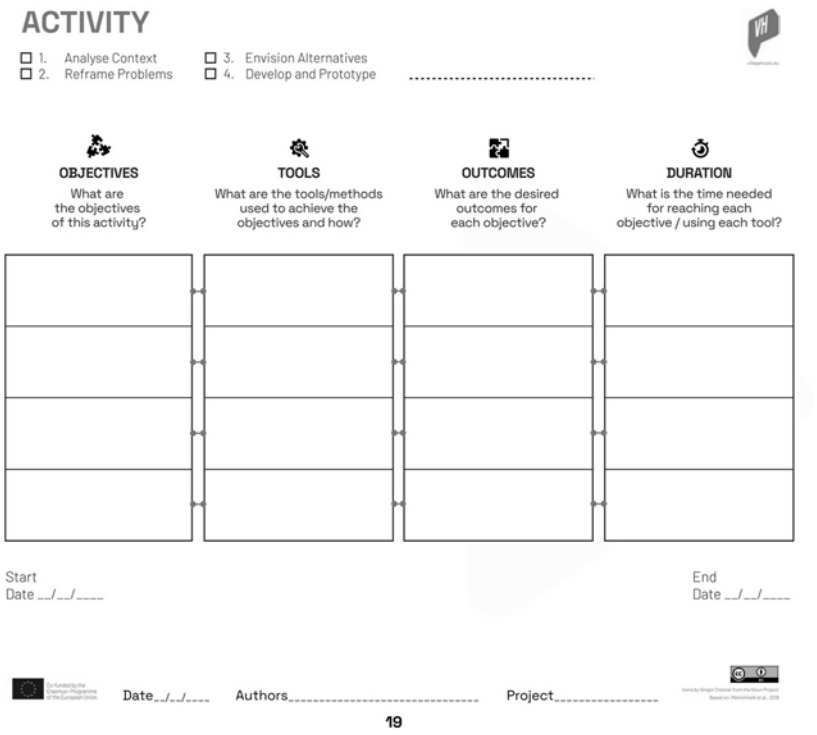


Figure 10: Section B: Process Canvas.

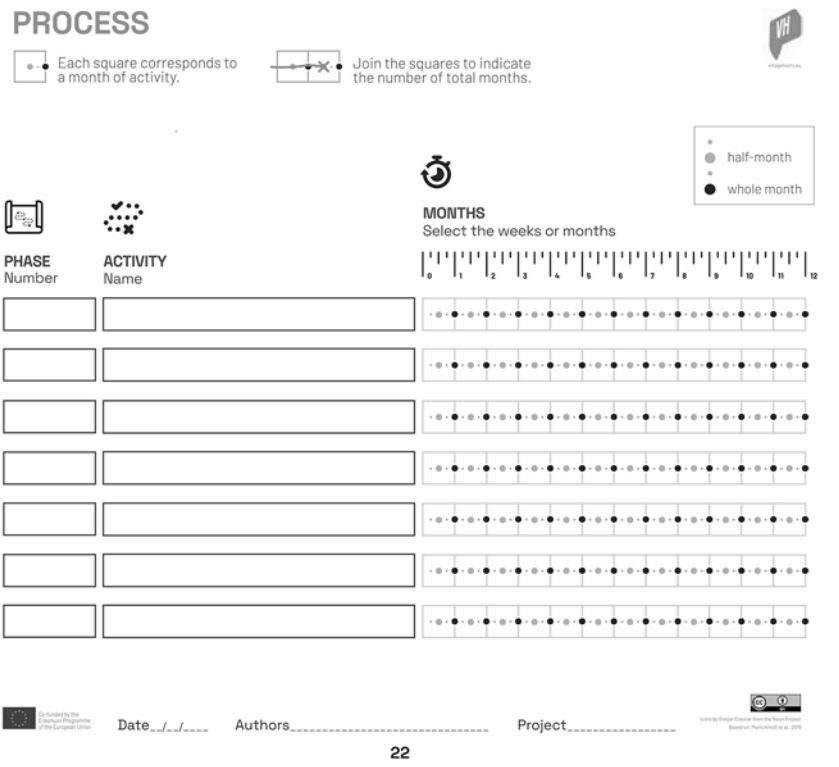


Figure 11: Section C: AI-generated images for brainstorming a possible Village Host initiative.

5. Conclusions

The OSVH toolbox was designed as a support for the organization of community-centred co-design processes for the development of Village Hosting initiatives together with local communities. Its design process has been a fruitful opportunity for reflecting on how to design co-design toolboxes with (a) the reuse and adaptation of existing open source projects; (b) the use of generative AI for brainstorming first ideas together with the toolbox; (c) the participation of stakeholders in the design process; (d) the design for ease of use at home and remote areas.

Reusing and adapting existing open source projects enable not only saving time, but also connecting projects and further extending them creating a longer research path (a). The SISCODE Toolbox (Menichinelli et al., 2019) and its related research (Menichinelli, 2020; Real et al., 2019; Rizzo et al., 2018) provided ready-made components that were also improved for the meta-design of co-design processes, here adapted for the context of social innovation grassroots initiatives in rural areas. Furthermore, the usage of open source icons (by Gregor Cresnar, Adrien Coquet) from the Noun Project greatly sped up the process of developing the toolbox even in a context where time and resources were limited by the rather small size of the task and overall project.

Rather than completely designing new projects, Generative AI could be used for sharing memories, concepts, ideas and creating a shared understanding of the background and context of a new project, that can be thus brainstormed later with the toolbox, mixing thus digital and analog technologies (b). The use of Generative AI by the authors during the test of the tool proved to be useful for engaging more deeply into the discussion and the context that had been proposed. AI made it possible, especially for those who were unfamiliar with the place chosen for the test, to better immerse themselves in the context, and to get in touch with the story and the images that came to life according to the parameters we assigned. The AI tool was certainly a good starting point for the brainstorming phase.

Stakeholders can also be integrated in the design process even if with just an online session, providing not only a validation but also a check for requests and thus an important resource for steering the design of a toolbox (c). Some of the stakeholders reacted very positively to the toolbox and asked for more details and an example of application, which led to a second iteration of the design. Since in the context of remote rural areas they are hard to reach, and because of the limited time available, full testing of the toolbox in the field was left to them beside the first test on Miro.

Most of the co-design toolboxes we examined were developed for workshops or professional use typically in urban and creative contexts with no lack of resources (e.g., printing A2 posters). We focused instead on how users at home and in remote areas could be using the toolbox (d) for example by printing it in A4 (more accessible) to be physically used on a wall, as a tangible documentation of the co-design process that could be observed by any stakeholder who passes by. Once again, this can merge digital tools (Miro) and physical places as a long-lasting documentation of design processes.

Due to the limitations of a short project and lack of resources in longer engagement with remote rural areas, planning future research is thus important not only for testing and improving the toolbox and the meta-design approach behind it, but also for uncovering new strategies for overcoming the limits of online education and of research projects, especially with remote rural areas which often lack infrastructures and knowledge necessary for running co-design processes. Among potential future directions, we envisage testing the toolbox in the context of university-industry collaborations in territories. Further research could also at the same time investigate the local rural stakeholders, typically under-considered and under-represented in design and social innovation initiatives, and how the gaps between them and urban ones could be filled.

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Transforming the Transformer in a Time of Crisis. Marie Neurath's Experience in the Time of the Web

Matteo Maria Moretti

Abstract *The article explores how Marie Neurath's work as a Transformer can inspire and inform contemporary digital social design practices. It draws parallels between the historical crisis faced by ISOTYPE and today's digital crises and introduces two case studies exemplifying principles of translation, relation, and enablement in information design.*

Author keywords *transformer; information design; digital social design*

1. Introduction

The purpose of this contribution is to draw attention to the emerging field of *digital social design*, with a particular focus on *information design*, and to highlight the need for interdisciplinary research in this area. Although information design has been widely researched from historical and cognitive perspectives[1], the link between design practice and social design issues has yet to be explored. As such, there are several important questions that researchers could address, such as how data usage practices change as they move from paper to digital, how to engage and assess impact with large and distributed online audiences, and how to inform with data in an increasingly polarised online environment.

This contribution traces a research line starting with analysing case studies beyond traditional information design, utilising data as a narrative device to open up debates and problematise the status quo. These works shift data from being a subject to an object and, in doing so, provide a means of exploring the potential for greater awareness and social equity through information design projects. The contribution identifies the information crisis as the context for this reflection and proposes three key concepts: *Translate*, *Relate*, and *Enable*. These concepts provide a framework for

1 https://www.jbe-platform.com/content/journals/1569979x/1/1

imagining a transformation process in the digital sphere and for configuring information design projects as devices for greater social impact.

To contextualise the contemporary relevance of these concepts, the contribution also highlights the role of Marie Neurath as a *Transformer* after WWI. Her work provides a helpful reference point for defining the contours of the contemporary reverberation of the information crisis in the context of a crisis similar to the present one. Overall, this contribution aims to contribute to the development of a more robust and interdisciplinary research agenda in the emerging field of digital social design, with a particular emphasis on the importance of information design in promoting greater social equity and awareness.

2. The information Crisis

The last decade has been characterised by, among other things, the *information crisis*. It had, and is still having, serious repercussions on democracy, science and society in general (Bennett & Livingston, 2018). On the one hand, modern society is confronted with *hyperobjects* (Morton, 2013), intangible, non-local phenomena whose effects we experience and contribute to simultaneously. These include but are not limited to, the Coronavirus, climate change, and the Internet: complex, abstract objects whose effects are difficult to measure and grasp, requiring data to do so. They impact the daily lives of millions of people, also in negative ways, and challenge the comprehension and reflection abilities of a vast scale of citizens. On the other hand, a significant portion of the population suffers from poor media and information literacy. The disintermediation of information (Bessi & Quattrociocchi, 2015) generated by the Web 2.0 technological acceleration (O'Reilly, 2005) has exposed Internet users, who lack the tools to approach media and information critically, to a plethora of information, often false or extremely biassed, particularly on controversial and highly polarised topics. Such campaigns are not limited to fake news but also include disinformation campaigns aimed at undermining the democratic resilience of contemporary society (Bennett & Livingston, 2018).

The information crisis has been the subject of several meetings of the European Council (2020) and the European Commission (2016). Of particular interest are the meetings in 2016 that included disinformation campaigns among *hybrid threats* and the one in 2020 that called for greater *media literacy* among the population to approach information and media critically. Even Unesco, in 2023, denounced the need for more *information literacy* to access information about health, the environment, education, and work and to make critical decisions about one's life[2]. It is

2 https://www.unesco.org/en/ifap/information-literacy

a widespread crisis, which finds a vast and heterogeneous public unprepared to approach the complexity that characterises the contemporary world critically.

In some ways, this is a crisis similar to the one that characterised Viennese society after the First World War; a society that came out of the war ruined, in a serious state of illiteracy, lacking a critical and democratic spirit towards the most important political and social issues. A context in which the ISOTYPE experience gave rise, conceived by Otto Neurath together with Marie Neurath and Gerd Arntz, and aimed to inform a broad and low-literate public visually. Although the two crises are not in continuity, several common points can be identified given the historical, political, social, and technological premises that triggered them. On the one hand, there remains a lack of specific literacy to interpret the world around us and develop greater democratic sensibility. On the other hand, specific design practices intend to inform and curb illiteracy through visual tools. A last element in common is the hybrid design nature: a continuous reconfiguration and repositioning to meet the needs of specific places and times (Margolin, 2002).

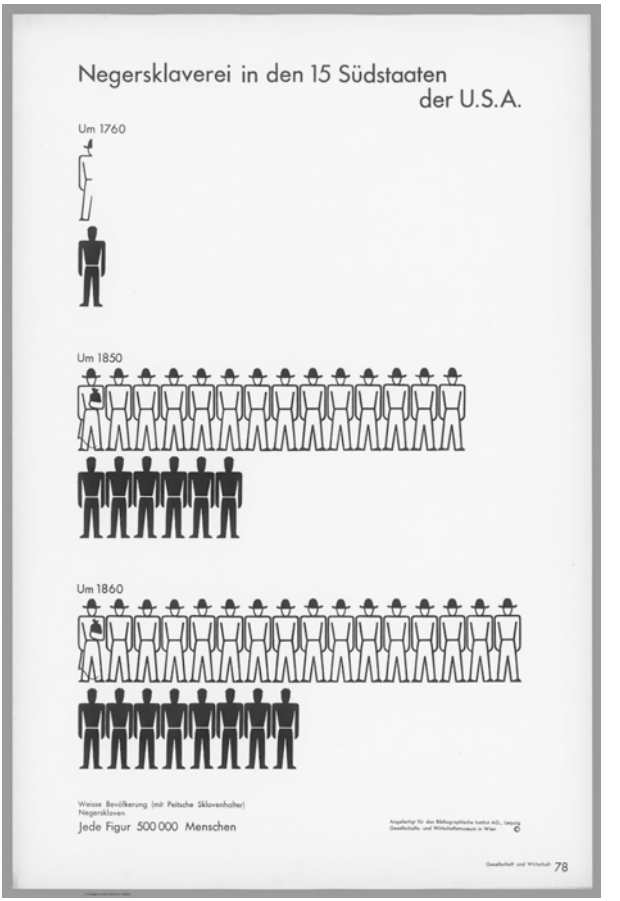
In this frame, the current information crisis presents a valuable scenario to build upon the ISOTYPE approach in the digital domain, focusing on the *Transformer* role discussed by Marie Neurath, the role of a visual and verbal translator that mediates meaningful content through design means. This aspect of the digital *Transformer* is an aspect that still requires research, and this contribution aims to bring it to scholars' attention, particularly from an *information design* perspective. Thus, the practice is positioned at the intersection of socially oriented information design and Science and Technology Studies, creating a space for both design and critical reflection in which two case studies described below, coordinated by the author of this contribution, come to life.

3. The *Transformer* Crisis

The year 1920 was a time of crisis for Vienna, which had just emerged battered from the First World War. It was during this period of unrest that the International System of Typographic Picture Education (ISOTYPE) was initiated by Otto Neurath in collaboration with Marie Neurath and Gerd Arntz. This system was developed to inform and visually educate an illiterate or semi-literate population segment on fundamental societal issues and the phenomena that characterise it. Additionally, it aimed to transmit an aptitude for scientific thinking towards developing democratic societies (Nemeth, 2013).

Otto Neurath, the founder of ISOTYPE, believed in the power of images to unite rather than divide people. He hailed ISOTYPE as a revolution that brought together data visualisation, graphic design, anthropology, and the social sciences (Figure 1).

Figure 1: ISOTYPE – Negersklaverei in den 15 Südstaaten der U.S.A. Angefertigt für das Bibliographische Institut AG., Leipzig. Gesellschafts- und Wirtschaftsmuseum in Wien. ©



This interdisciplinary approach gave rise to a new figure called the *Transformer*, who was capable of receiving, filtering, and shaping scientific content so that it was accessible to the target audience and served educational and training purposes. Marie Neurath played the role of *Transformer* within the interdisciplinary working group that made ISOTYPE possible. This central role in design is comparable to that of the modern designer, meant as a translator (Baule & Caratti, 2016). The *Transformer* is capable of dialoguing with the different figures that make up the interdisciplinary team, relating with the communities of reference, and translating information on complex phenomena in an accessible and engaging way.

The *Transformer*, therefore, possesses not only design skills but also social skills, and is capable of immersing in new contexts to grasp their peculiarities and cultural nuances on which to build relevant and accurate information, visually and verbally. It is a role which acquired greater substance only after Marie Neurath's experiences in Africa. In fact, ISOTYPE was born and developed in the West, betraying the concept of internationality for having the West as its main reference point. Marie Neurath's reflections on her collaboration with the Nigerian government are worthy of note, as quoted by Kindel in 2022:

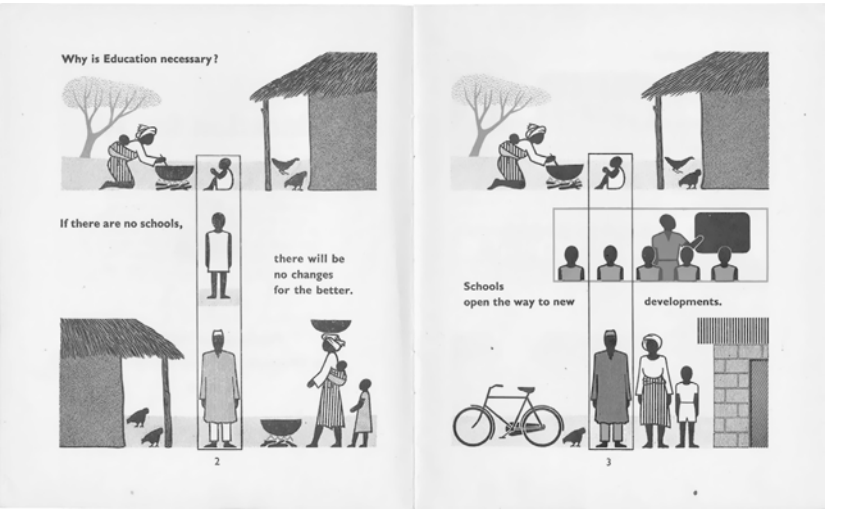
> "Already in London, I had been given a 'white paper' on education to read... From this I had designed a large summary chart; it went straight into the wastepaper basket after I had walked through the streets of Ibadan; why should these people have to struggle with my chart?"
> (Kindel, 2022, p. 6)

And later, in another interview about the same experience, she recalls that:

> "More than before I recognised this when I had to work out ways of informing the Nigerian people about health, education, agriculture, voting etc., in visual terms. Man, woman, house, plants, markets, trees... all had to be drawn in a different way to be understandable in that country. Also the approach, the speed of information, the colour scheme, the ways to catch the attention-all had to be different."
> (Kindel, 2013, p. 192)

As highlighted by Marie Neurath's reflections, the limitations and contradictions of ISOTYPE emerge clearly, particularly when applied to a non-Western cultural context. If the awareness that is gained limits and redefines the international ambitions of ISOTYPE, it also indicates the potential of the transformative approach, which appears scalable in other cultural contexts.

Figure 2: Marie Neurath: Education for all in the Western Region, pages 2–3.



> "The methods and approach are, I think, more universal than the symbols are. I had to discover this when I worked for Africans for some time. I had to make things clear to them, and I could not force our 'international symbols' on them. Many symbols, of man, woman, house, tree, field, etc. had to be specifically designed for them. When things are equal all over the world the symbols can be the same." (Neurath, 1971)

It is, in fact, a translation process that considers different cultural and social aspects and is capable of reconfiguring the project according to the community of reference. It is the first step in a broader process that aims to relate to the audience, designing familiar and relatable entry points to enable them to understand new phenomena through information design.

> "It is the responsibility of the 'transformer' to understand the data, to get all necessary information from the expert, to decide what is worth transmitting to the public, how to make it understandable, how to link it with general knowledge or with information already given in other charts. In this sense, the transformer is the trustee of the public" (Neurath & Kinross, 2009, pp. 77–78)

Although there is substantial literature on ISOTYPE, particularly its historical, social, and educational aspects, less is known about the details and reflections on design practice concerning its translation aspects (Neurath & Kinross, 2009). The *Transformer* is an essential figure that can support informing and reconfiguring contemporary design practices, especially those operating at the intersection of

data, information and society, inevitably digital practices, to become a "trustee of the public" (Neurath & Kinross, 2009).

4. Transforming the Transformer

The comparison between ISOTYPE and contemporary information practices has garnered considerable attention among scholars (Schreder et al., 2018; Luigini & Moretti, 2019; Piekarski, 2016; Bohman, 2015; Jansen, 2009). However, it is worth noting that while many researchers have explored the subject, a limited number have delved beneath the surface, focusing on the profound implications of the relationship between ISOTYPE and modern information practices (Mayr & Schreder, 2014; Zambrano & Engelhardt, 2008).

This section does not merely address the reinterpretation of pictograms and graphical elements in contemporary information design. Instead, it seeks to explore the narrative construction of reality through design modalities that synthesise principles from data design, journalism, and the social sciences. These integrated forms represent a response to the challenges and opportunities of the ongoing information crisis. It is crucial to recognise that these hybrid forms might not be exclusively digital; instead, they encompass a broader spectrum of approaches.

Within this conceptual framework, the moments of crisis framed above offer an opportune juncture to devise an approach that can inform and shape the social practices of digital information design. It is a pivotal moment to gather many insights and begin delineating an emerging practice, ultimately leading to its comprehensive systematisation through extensive and sustained research efforts.

The reflections presented in the ensuing discussion should be construed as the initial groundwork, representing the nascent stage of a strand that will be enriched by future scholarly contributions in the time to come.

The transformation of the audience

The pervasive influence of technology has profoundly reshaped our interpersonal relationships and information processes, consequently affecting a profound evolution in the public sphere compared to the *Transformer* era. The concept of the public has shifted from being relatively well-defined and delineated to a state of diffusion and geographical and cultural distribution. Within the contemporary digital paradigm, content dissemination targets an expansive, decentralised, and diverse public, characterised by varying levels of educational attainment, disparate age groups, and shared interests or mere curiosity as unifying factors. Consequently, the challenge of identifying the target audience and shaping the design accord-

ingly—a central tenet of design practice (Margolin, 1997)—presents a significant practical problem.

To navigate this inherent complexity, it becomes necessary to devise stratagems to delineate or reference specific categories of people. One possible strategy involves the highlighting of these categories in the context of *spaces*, whether those are *physical* or *digital*. Despite the Internet's vast and dispersed audiences, a closer examination reveals that diverse generations of people gravitate towards specific digital spaces, such as social networks (Laor, 2022; Gazit et al., 2020). Contemplating the digital spaces frequented by the target audiences presents a valuable approach to design that helps towards a more refined consideration of the forms, languages, and contents. While this approach is imperfect, it offers practical utility in disentangling the intricate web of complexities inherent to audience engagement. It is a pragmatic means to constrict the expansive field of design possibilities. Furthermore, it is conceivable that specific digital projects extend their influence into physical spaces, facilitating connections with communities seeking access to digital information. These approaches bridge the physical and digital worlds, thereby facilitating a more precise and effective approach to reaching out to an audience and designing for them (Bollini, Mastroianni, 2023; Mukta, 2023; Offenhuber, 2019).

In essence, it is helpful to adopt an ecosystem perspective, extending the project to multiple locations, physical and digital, creating a chain effect of information dissemination useful to reach the target audience.

The transformation of language

ISOTYPE introduced a novel approach characterised by dry visual and verbal language, using the Futura font, a few specific colours, essential and neutral headings, and pictograms within the graphics (Jansen, 2009). This approach was motivated by the assumption that images possess an international quality and that "the effect of pictures is frequently greater than the effect of words, especially at the first stage of getting new knowledge" (Neurath, 1936). However, almost a century later, while visual communication predominates in the media, pictograms have become a rare sight in graphs: contemporary audiences have become increasingly proficient in interpreting simple charts. Although emojis are used in many countries and cultures (Abel, 2019) and might be assimilated into a modern version of pictograms, only a few information design projects utilise them. Despite their internationality, emojis have their specific uses and meanings in relation to the cultures that adopt them (Guntuku, 2019) and are often associated with informal communication and emotional content within digital communication.

Despite the discontinuity brought about by the decline of pictograms, the contemporary *Transformer* is still required to adapt visual and verbal languages to global communities. This necessitates a thorough understanding of visual languages, so-

cial skills, and technical and expressive possibilities relevant to storytelling, especially in dealing with complex topics.

The challenge of contemporary information design is to present complex data in an accessible and understandable manner without trivialising or introducing abstraction. Unlike the paper medium of the past, web design allows for interactive content and advanced narrative systems such as *scrollytelling*, which matches scrolling with specific animations or events, to create a narrative approach that isolates and builds on a series of contents, unravelling complexity and enabling understanding (Tjärnhage et al., 2023). Animation, an additional tool, can increase immersion and engagement or even serve as an agent of meaning (Burgio & Moretti, 2020), while interactive explorations of graphs or data visualisations provide new forms of storytelling, such as the *reverse martini glass* approach (Segel & Heer, 2010), which is characterised by an author-driven opening, followed by an open-data exploration to enable new personal patterns and perspectives.

Although it is challenging to disseminate the complexity of contemporary phenomena, digital technology offers the contemporary *Transformer* several tools to dilute complexity and build true forms of enablement. The portrait of an 'augmented' *Transformer* emerges as a figure that straddles design and social practices on a larger scale than ever.

The transformation of the relation

Neurath's innovations transformed museums into places of learning and education, offering fundamental and strictly scientific information for social understanding, even to the less educated, without depressing them as scholarly books and statistical tables do (Jansen, 2009; Neurath, 1973). In today's world, it is not the public that goes towards information, it is the other way around. The overabundance of information, combined with the persistence of technology and the increased fragmentation of attention, pose new challenges for the contemporary*Transformer*. It is essential to develop effective strategies to engage the audience in an immersive experience and encourage them to continue reading beyond the first contact.

To achieve this, it is crucial to consider the relational aspects of the information design project, which involves designing a relationship of proximity between the audience and the phenomenon described. This requires revealing the effects of phenomena on everyday life, or vice versa, the impact of everyday actions on global phenomena. The content should develop around the reader, accompanying and unravelling along the story, stimulating curiosity and learning. The proliferation of data in contemporary times enables the creation of customised narratives capable of reinstating proximity to phenomena. This fact is exemplified by various projects such as the New York Times' coverage of climate and pollution (Popovich et al., 2018; 2019), which utilises data to personalise narratives based on an individual's geographical

and personal connections. In contrast, initiatives such as the *Civic Budget of the City of Gdańsk*[3] offer transparency to the public regarding how their tax contributions benefit the community. These initiatives demonstrate the potential of reader-centred data storytelling to enhance public engagement and promote constructive civic participation.

An interdisciplinary effort is necessary to tackle this approach through the collaboration of professionals with lateral skills, which are not only information design but also social and relational ones. Therefore, it is pertinent to amplify and extend the *Transformer's* knowledge in a way that they are immersed in the world and habits of their target audience to develop related and engaging languages and experiences that can inform and educate. Moreover, this paper proposes an approach that can inspire digital information projects, especially those that aim to last, serving as true knowledge bases on the borders of the digital commons (Dulong de Rosnay & Stalder, 2020).

Case studies

The reflections above arise from an extensive body of work on information and information design viewed through a social lens. This work has culminated in identifying three critical concepts, namely *translate*, *relate*, and *enable*. It should be noted that the present paper does not purport to develop a comprehensive methodology for digital design, as doing so would necessitate more diverse and nuanced case studies. Nevertheless, it constitutes a practical framework that can serve as a roadmap for digital information projects.

The first concept, *Translate*, pertains to the interpretation of data, and not just quantitative data, in a way that renders it meaningful to a broader audience. Although data is frequently made available to the public, rendering it relevant to a diverse audience requires various skills. The initial phase involves translating data from rows and columns in spreadsheets into valuable, meaningful information. This information is subsequently translated visually through compelling graphics embedded within a broader narrative, supported by carefully designed text and contents.

The second concept, *Relate*, is fundamental to endowing data translation with any value. Bridging the gap between data and the audience is critical. Providing a connection, such as a particular entry point, can make vast amounts of data meaningful and engaging for specific individuals.

The third concept, *Enable*, may be achieved in two stages. The first stage entails supporting readers in comprehending the content and graphics, while the second

3 https://www.gdansk.pl/gdanski-budzet (retrieved on October 21, 2023)

stage involves catalysing discussions and motivating readers to participate and engage with the topic.

Translate, *Relate*, and *Enable* are three interrelated concepts, each building on the previous one. Although these principles are frequently traceable in well-designed projects, they are often implicit and not explicitly articulated from the outset. Thus, considering how projects respond to these concepts can be advantageous, leading to a more structured reflection on digital projects that aspire to have a social impact, particularly in the context of the new digital *Transformer*.

The following discussion pertains to two case studies commissioned between 2020 and 2023 by the Osservatorio Balcani Caucaso. Glocal Climate Change[4] and Mapping Diversity[5] focus on *climate change* and the *gender gap* in European cities, starting from a data-based perspective. Despite being privately commissioned, these projects aspire to function as *digital commons* accessible to a broad and diverse audience. They are characterised by the intention to push forward the definition of *information design*: they do not merely display numbers. Indeed, they share a social aim: the audience can access, re-use, and contribute to the data that underlies the work and get meaningful content and insights hidden by the numbers. Moreover, projects support unskilled readers to understand the data and enhance their reading and interpreting skills. To achieve that, digital design plays a crucial role in creating proximity between the data and the readers, building stories around them, and reducing the distance with the phenomenon they are concerned with.

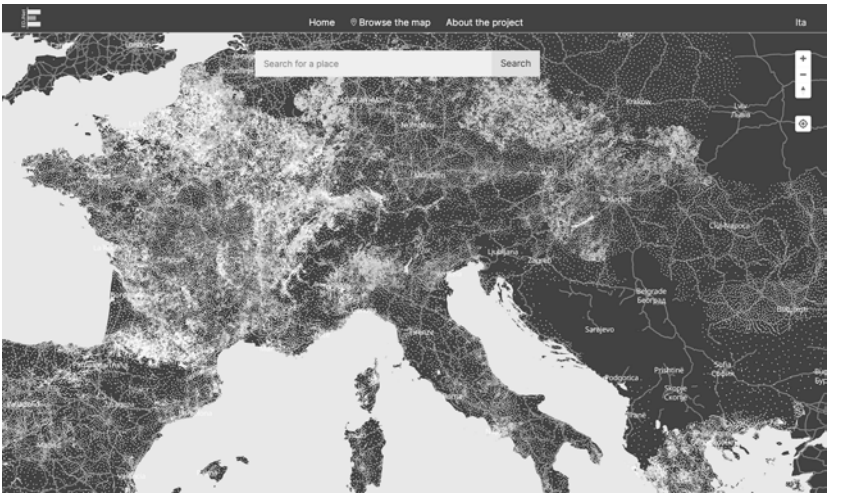
Glocal Climate Change

The project, published in late 2020, aims to make open data concerning European climate accessible. It achieves this by making temperature trends on European territory from 1961 to 2019 instantly visible. The project consists of a map with over 100,000 points, coloured by the climate trend data. Each point corresponds to a single European municipality, giving shape to a granular and ubiquitous visualisation that encourages visitors to search for places they are connected to (Figure 3). During test sessions with readers, it was observed that each person accessing the project searched for places they connected with, such as their birthplace, honeymoon destination, first kiss location, current residence, or holiday spot, for instance.

4 https://glocalclimatechange.eu/

5 https://mappingdiversity.eu/

Figure 3: The dot-based climate map



Once the readers find their places and click on them, a new page opens: it narrates the specific climate trend through a series of text and charts. The narration starts from the readers' places to broaden the story towards the surrounding provinces and regions (Figure 4) to broaden the readers' climate perception.

Figure 4: The place-specific climate storytelling page

Through scrollytelling, the content density is diluted, allowing readers to focus on one piece of the story at a time. Furthermore, the data of the main graph is progressively revealed, helping readers understand their places' changing climate over the years (Figure 5).

Figure 5: The scrollytelling supports readers in the climate trend chart understanding

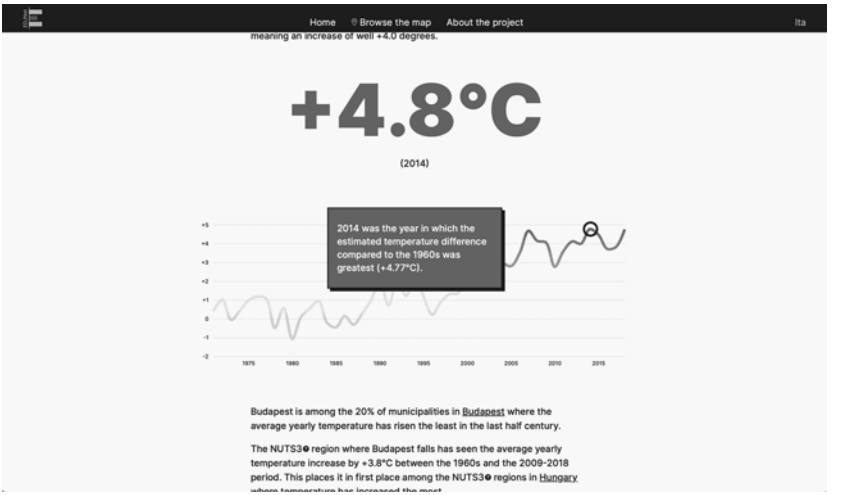


Figure 6: The informative thumbnail enables readers to spread information

At the end of the page, readers are invited to share an informative thumbnail on climate change in their favourite places, enabling them to spread the word and engage in online debates (Figure 6).

In terms of the *Transformer*, the translation process entails converting spatial data from the original dataset into municipal data, which displays locations instead of surfaces. This strategy renders the locations readily identifiable on the map, enabling European readers to locate them easily and establish a direct connection with the places they represent.

To let readers *relate* to the visual translation, the project creates a climate-specific narrative surrounding the readers' respective locations. By leveraging highly detailed data, the audience is exposed to the climate of the places they care about rather than being presented with aggregate data on a regional or national level. This approach fosters a connection between the audience and a complex and global phenomenon, relying on readers' places as a proxy. Notably, it serves to diminish the perceived distance between everyday life and the phenomenon of climate change, which is often viewed as distant (Bushell et al., 2017).

Finally, it is noteworthy that the scrollytelling approach aims to *enable* readers. It directs the readers' attention towards the salient aspects of the main graph, thereby providing them with fundamental yet crucial support in comprehending it. Additionally, readers are emboldened by the knowledge base and the informative thumbnail to disseminate the topic within their social networks.

In the weeks following its publication, Glocal Climate Change garnered considerable interest, attracting tens of thousands of individuals to the platform. Analytics indicate that thousands of locations were visited, each with only a few visits, underscoring the granular nature of the project. Simultaneously, thousands of thumbnails were disseminated on social networks, not only by activists but also by politicians, administrators, and concerned citizens, reflecting the broad appeal of the project's message concerning the climate situation.

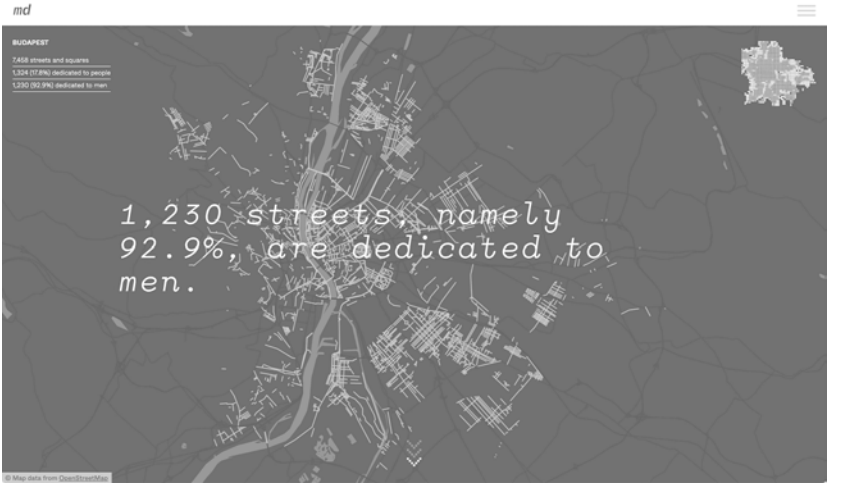
Mapping Diversity

In 2021, a pilot project was initiated to address the gender gap in toponymy by gathering and narrating data from the primary cities of the 21 regions of Italy. Subsequently, in 2023, the project was expanded to the European level, focusing on 40 European cities. The homepage acquaints readers with the topic and its significance, followed by a description of European-wide data, including the percentage of men and women represented in European street names, recurring figures, and their primary professions (Figure 7). The project's primary contribution is the maps of each city, which can be accessed via the homepage.

Figure 7: Mapping Diversity homepage, the most popular women's figures

Readers are guided through a scrollytelling technique that allows them to explore each city through a fixed map accompanying them as they scroll down the page. Contextual information associated with scrolling appears to comment on the changes on the map (Figure 8).

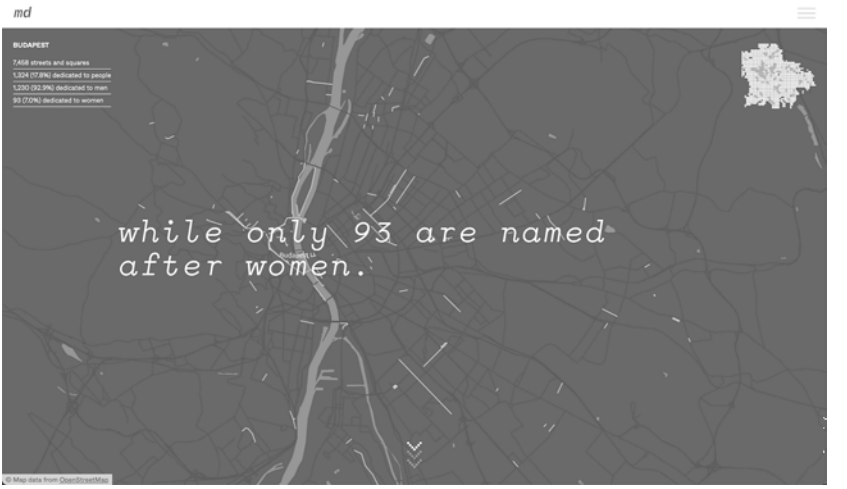
Figure 8: A moment from the Budapest scrollytelling narration



Each city is narrated using the same narrative structure, starting from the total number of streets to those dedicated to women (Figure 9). It follows the *reverse martini glass* narrative structure pattern (Segel & Heer, 2010): it commences with an

initial author-led section that elucidates the data through the map, followed by readers exploring it independently. At the end of the page, readers are invited to share an informative thumbnail on the gender gap in the toponymy of that specific city.

Figure 9: Last data narration before the free map exploration



In terms of the *Transformer*, the complexity of representation in street names is visually *translated* through a map, highlighting the data and values associated with the characters to whom the streets are dedicated. The scroll-activated narrative employed in the project establishes a connection between the total number of streets in a city and the frequently minute number of streets dedicated to women. This narrative stratagem not only promotes reader engagement but also reinstates the proportion of the phenomenon, attributing significance to the numbers rendered visible.

The *relatability* is assured through both the gender and geographical dimensions. In addition to those individuals who reside or have resided in the cities featured in the project, the narrative involves both male and female readers as protagonists of the story. Finally, through the use of scrollytelling, readers are *enabled* to interpret the map. It metaphorically accompanies them on a journey that guides them from the global data, which refers to the total number of streets in a city, to the crucial data, which pertains to the number of streets dedicated to women. This journey supports readers in comprehending the context of the data and the map representation, supporting their ability to explore it autonomously once the narration ends.

The project is still updating: the working group periodically adds data on new cities and offers offline activities designed to involve citizens. In May 2023, the first Mapping Diversity workshop was conducted in Brixen (Italy), with a group of uni-

versity students collecting the data and contributing to the map of their town. Such an approach reinforces the digital commons nature of the project while simultaneously diminishing the perceived distance between citizens and the phenomenon by enabling them to comprehend it and contribute to the data.

5. Conclusion

This contribution seeks to reposition the role of the *Transformer* in the contemporary crisis by reflecting on the post-war crisis in which the ISOTYPE experience was born. Today's society faces a serious crisis of understanding, further aggravated by the acceleration of technology and the crisis of information design that fails to deliver transparent and enabling information. Unlike in the past, reaching out to one's audience has become a challenging task, and designing connections that enable them to engage with data and phenomena that concern them, which are often not perceived as a matter of close concern, has become increasingly difficult.

In this context, Marie Neurath's transformative approach advocates the need to transcend superficial visual aspects and instead embrace the cultural, social and political dimensions of the reference community. Building on this approach, this contribution proposes the concepts of *Translate*, *Relate* and *Enable* as central principles for contemporary digital information design, particularly concerning complex social and global issues. Through the analysis and reflection on two case studies, this contribution sheds light on the importance of these principles in today's society. It highlights their potential to address complex social and global issues. These concepts not only aim to provide a practical framework for social designers working in the digital domain but also serve as a starting point for a new research strand where the research on digital information design practice and Science and Technology Studies can converge, compare their findings and frameworks, and collaborate.

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Disrupting by Design: Assessing Imaginaries of Techno-Futures

Stefanie Ollenburg, Marius Land

Abstract *Any technology is embedded in complex socio-technological, ecological, and political systems and entangled in a contested space of biases and assumptions. We need to find solutions for today's crises beyond the technological trajectories.*
The role of design within the context of technological development and research is ambiguous. Often, design shares complicity in enhancing and legitimating existing paradigms and can constrain new emerging ways of thinking. Yet, is there the possibility for design to critically challenge existing paradigms of technological solutionism?
To address this issue, we draw on our ongoing research project, ScenAIR2050, as a case study to reflect on the role of design linked to futures research and its relationship to technology-driven disciplines. We are reviewing the process of Research through Design and the corresponding methods from design and futures research to build a process to critically accompany fundamental technological research.
In this paper, we want to critically discuss the role of design and futures research in relation to technological research and development. We reflect on technology-driven procedures and examine the extent to which transdisciplinary design research can enable and hinder disruptive transformative pathways of future developments.

Author keywords *(de)futuring; research through design; critical futures studies; alternative futures; techno-solutionism; transformation design*

1. Introduction

Technology is often perceived as the key to solving the climate crisis. Yet, it can be said to be embedded in complex socio-technological, ecological, and political systems and entangled in a contested space of biases and assumptions. Thus, solutions to multiple current and future crises can rarely be found along linear technological paths when they utilise tools similar to those that have led to the problem.

To steer complex technological and societal systems towards sustainable pathways calls for a system-wide "second deep transition" (Schot & Steinmueller, 2018, p. 1565). This would imply a fundamental transformation of current assumptions regarding production, consumption, and distribution along multiple socio-technological systems. To adequately address and understand this complexity, transdisciplinary frameworks within research, development, and design are essential.

Taking an ongoing research project about the possible futures of the Air Transport System (ATS) as a case study, this paper reflects on the role of design and futures research within fundamental technological research. The project has the objective of providing exploratory and normative user-centred scenarios for a future ATS. The scenarios intend to provide a holistic perspective on the field of aviation, departing from the paradigm of linear trajectories of techno-futures. The addressees for the scenarios in the project are colleagues from an excellence research cluster with disciplinary backgrounds in various types of engineering and the natural sciences.

Fundamental technological research is often defined by its disciplinary pathways and a certain type of agenda-setting. Design and futures research, with their disciplinary ties to the humanities, arts, and social sciences, can challenge these boundaries to trigger new lines of thought.

Here, we reflect upon how design practice combined with futures research can serve as an inspiration for decision-making beyond the obvious. Furthermore, we consider how the process itself offers a learning path towards change and other possibilities (Jonas et al., 2015). This may enable technological development as "radical innovations [that] emerge in niches, on the fringe of existing regimes" (cf. Geels et al., 2017, p. 465). It is necessary for stakeholders to learn and challenge the system for it to adapt:

> "It is therefore insufficient to rely solely upon technically rational criteria for decision-making, whereby experts use computer models to determine an "optimal" transition path which is then implemented by policymakers." (Geels et al. 2017, p. 474)

Therefore, the scenarios in the ScenAIR2050 project, on the one hand, present possibilities to explore plausible as well as (un)desirable development paths and, on the other hand, attempt to devise methodologies to further the intended transdisciplinary decision-making within the limits of the ATS as a complex system.

The task is to create a transdisciplinary and participatory process and to work with the challenges of given disciplinary boundaries. In the research process, we realised that the understanding of the issues to be addressed by the project changed throughout its course. On that premise, this paper reflects on the ongoing research process and explores how the combination of design and futures research methods and tools can elicit responsible approaches to future technological developments.

Specifically, we ask: How might design critically engage with and challenge existing paradigms and trajectories of complex socio-technological systems?

First, we introduce the case study, its objective, and its framework. This is followed by a reflection on our position in the field of design and its connections to futures studies. In the section that follows, we expand the understanding of linear technological trajectories and technological solutionism by introducing socio-technological systems. In our conclusion, we reflect on our process by drawing on the discussion on design research, its critical perspective, and the spaces of possibility it can offer for socio-technological research. Finally, we conclude with an outlook on further research.

2. ScenAIR2050 – A Case Study

Aviation is responsible for one-third of the emissions of the global transport system (IEA, 2021). At the same time, the air transport system (ATS) is a complex system spread across different dimensions (social, environmental, political, economic, etc.) and other systems (technology, policy, security, etc.). Research questions regarding its sustainable future range from technological issues to systematic considerations that include the overall aviation environment and its various stakeholders.

The project discussed here, ScenAIR2050, is part of the excellence cluster for Sustainable Energy Efficient Aviation (SE^2A), an interdisciplinary research consortium on technologies for a sustainable and eco-friendly air transport system (ATS). It combines three integrated cluster areas (ICA): ICA A focuses on the 'Assessment of the Air Transport System', ICA B on 'Flight Physics and Vehicle Systems', and ICA C on 'Energy Storage and Conversion'. Most of the projects are concerned with fundamental research for technological developments (Technological Readiness Level 2–3). Thus, they address technical and economic optimisation issues, and the primary research methodologies are quantitative.

As part of ICA A, ScenAIR2050 explores alternative futures for an ATS in 2050. It combines futures and design research and their qualitative methods such as future scenarios, user research, and participatory methods. By integrating social, technological, economic, environmental, and political factors (STEEP environments) and possible lifestyles of future stakeholders, we provide a holistic perspective on the field of aviation, going beyond the paradigms of linear technological trajectories. This methodology establishes a tension between the dimensions of technology and stakeholder interests that, through the qualitative scenarios, allow ambiguity and uncertainty to emerge, giving space to alternative futures for an ATS in 2050.

The ScenAIR2050 key objectives are: (1) to deliver critical contextual knowledge on plausible future developments as an orientation for research; (2) to integrate the future passenger as a stakeholder within the research; and (3) to create platforms

that drive the exchange within and beyond the cluster. Thus, the main research questions in the project are:

- What are plausible scenarios for the development of a sustainable and energy-efficient ATS until 2050?
- How might people travel in the future, and who might thus be the future airway passengers?
- How do we consider which technological developments might be more acceptable to future stakeholders?
- What are 'alternative' or other futures that need to be recognised as plausible?

For the expected outcomes, the research design includes foresight scenario techniques (Bishop et al., 2007; Kosow & Gaßner, 2008) and design approaches. The groundwork is established by defining the boundaries and identifying the connectivity within the complex ATS through analysing the STEEP environment. Following this, explorative scenarios are developed, offering a first glimpse of possible directions and plausible futures. Further, through integrating different stakeholder perspectives, for instance by using metaphor analysis in order to extract specific requirements and concerns, the (un)desirable futures are mapped out as normative scenarios. The research process contains several touchpoints for knowledge exchange and enquiries (surveys, workshops, co-creation labs) to foster the intended transdisciplinarity and to challenge existing assumptions within the research cluster.

3. A project of Research through Design

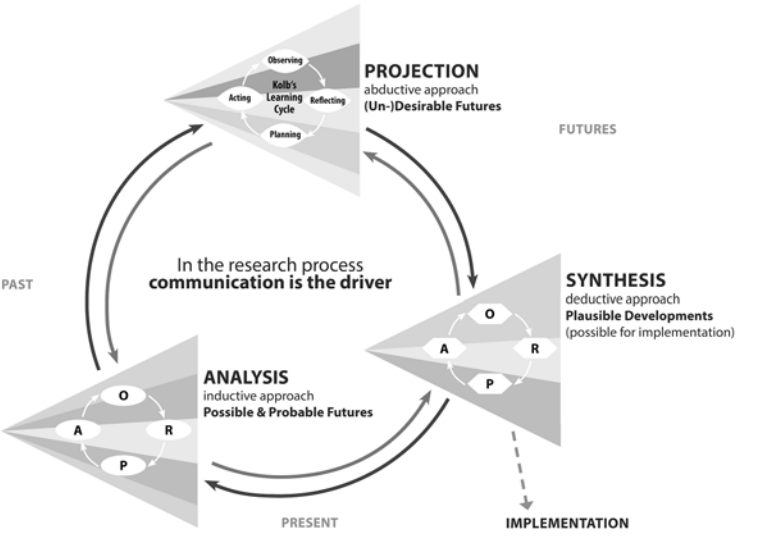
The scientific approach of ScenAIR2050 is grounded in Research through Design (RtD). It bridges knowledge generation through systematic scientific research and practice-oriented designerly way of knowing methodologies (cf. Cross, 2006; Jonas et al., 2015). An existing situation is studied having designers, scientists, and addressees as active researchers without the divide between scientific observers and the observed. As a transdisciplinary research process, it aims to integrate the expertise, creativity, and design competencies of all actors and thus enables a diversity of methods (Findeli, 2010, p. 297). For a comprehensive process, RtD is underpinned by the hypercyclic generic design process model consisting of the macrocycle phases of Analysis, Projection, and Synthesis. Each includes an experiential learning cycle (Jonas, 2007, p. 1374) of the phases of experience/research, reflection/analysis, thinking/synthesis, and action/realisation (Jonas. 2007; Stock & Kolb, 2021).

The RtD phases (APS) of the macrocycle combine principles of scientific logic with design methodology: (1) Analysis asks "How is it today?" Researchers study past

and current facts through Induction. (2) Projection concerns "How could it be?" A phase that considers values, beliefs, and visions, and uses abduction as a logic of scientific creativity to induce new insights and ideas by combining observation with intuition. (3) Synthesis focuses on "How will it be tomorrow?" The findings of the previous phases are combined, and deduction is used to identify results and possible effects of potential developments (Chow & Jonas, 2010, 2008; Jonas, 2007; Ollenburg, 2019, p. 55).

4. The Project's Framework and Research Design

Figure 1: Futures-Design-Process Model combining the concept of possible, probable, desirable, and plausible futures with the Generic Design Process and Research through Design (Ollenburg 2019:57/update by author).



The framework connecting design and futures research in ScenAIR2050 is based on the "Futures-Design-Process Model" (F-D-P Model). The F-D-P Model combines the RtD process model phases with the Futures Studies concept of probable, (un)desirable, and plausible futures, respectively (Bishop et al., 2007; Inayatullah, 2013).

The model is meant to "systematically enclose the concepts and methods derived from futures studies, utilise the inspirational momentum of design, and measure up to scientific standards of reproducibility and transparency" (Ollenburg, 2019, p. 52).

Through this model, the project design becomes an instance of structured research in an iterative process. In the Analysis Phase, the systemic boundaries for the ATS relevant to the SE²A cluster are defined by taking into consideration the results from previous related scenario projects (Mozuni et al., 2019). With continuous literature review and engagement with research partners, a STEEP factor analysis is the first step to identify key factors for building explorative scenarios (Kosow & Gaßner, 2008, p. 50 ff.). The analysis and projection phases are in a permeable transition. Thus, through a protracted process, we identified 15 key factors, and in co-creation with cluster members, we developed several future projections for each. They are the building blocks for the explorative scenarios that, with a software-based morphological box, are then calculated.

The remaining steps of the project until the end of 2024 are the furthering of the projection phase by developing normative and user-centred scenarios. Further, all derived scenarios are mapped and visualised in the Synthesis Phase. The different scenarios serve as tools to analyse and assess trajectories and research findings of the cluster. This can be done by inserting a specific set of questions, using future personas, or simulating disruptive developments (e.g., Wild Cards). Using the scenarios for workshops and games, they become a platform for participatory reflection within and beyond the cluster.

5. Design Facilitating Research

In the ScenAIR2050 project, design is understood as more than generating artefacts such as products and their interfaces but as a process to foster transformation. This understanding of Transformation Design (TD) plays a crucial role in bridging disciplines and laying pathways for the transition of complex systems. All artefacts, such as a whiteboard in a workshop, storytelling, or visualisations of cluster activities, create relationships between the object, its user, and the environment. Deploying RtD, the process utilises skills, experience, and trial and error with uncertain results. In our project, we understand that "[d]esign takes place in the world of imagination, where one invents and manipulates ideas and concepts instead of the real thing – in order to prepare the real intervention. […] Design terminates with a commitment to a plan which is meant to be carried out" (Rittel, 1988, p. 1).

Thus, in ScenAIR2050, we understand the role of design as a unique point of view that allows a shift of perspective:

> "…, an understanding that recursively embeds another person's understanding in one's own, even if, and particularly when, these understandings disagree, contradict one another, or are thought by one to be wrong or appallingly un-

> ethical. This recursive understanding of understanding is a [S]econd-[O]rder [U]nderstanding" (Krippendorff, 2006, p. 66).

With its fundamental technological research and its aircraft design efforts, most projects in the SE²A Cluster with quantitative empirical methodology revolve around e.g., optimisation of technical parameters of saving fuel through gradual retrofitting, clean propulsion technologies, as well as optimising existing design concepts to lower the energy consumption and reduce CO^2 and atmospheric gases. ScenAIR2050 adds qualitative research methods and a critical perspective to accompany the technological-focused studies with the aim of enhancing reflexivity and transformative capabilities within the cluster. Thus, it provides a setting for "second-order learning" to reflect on the primary research findings to approach them from a distanced and detached perspective (Grin & Van De Graaf, 1996; Pätzold, 2011; Schot & Geels, 2008).

6. Perspectives on Design

As designers and researchers with the capability to facilitate dialogues, we seek to articulate and assess worldviews and visions of the cluster community to provide orientation and support actors to participate and to become active (cf. Krippendorf, 2006). As such, the project follows Herbert Simon's claim that "everyone designs who devises courses of action aimed at changing existing situations into preferred ones" (Simon, 1996, p. 55), to take into account certain perspectives on design.

First, there is the basic temporal core to design, as an act of the imagination from the present situation into the future. Designing is an act done in the present for an undetermined future (Krippendorff, 2007, p. 72). Second, if everyone designs, design itself becomes an ontological concept that prefigures, shapes, and acts in our daily lives. As such we are deeply engaged with and dependent on design. The ATS, as an example, shows that while advancements in aircraft design and related services help to enhance global connectivity, it does enable systemic dependencies of environment-damaging infrastructures, mobility patterns, and services. Third, transforming an existing situation into a preferred one is a political act, since it is an ongoing negotiation on preference when there is no single right answer, as in recent discussions on design and sustainability (Boehnert, 2018; Mazé, 2013).

Design philosopher Tony Fry even argues that design is the foundation of our modern existence, as it shapes power structures, is operationalised as technology (Pater, 2021), and is enmeshed in "industrial, post-industrial and consumer culture that made unsustainability a structural feature of the environment of shaping our 'natural' world" (Fry, 2020, p. 6).

7. Transformation Design as Design Futuring

By arguing that "we design our world, while our world designs us" (Fry, 2020, p. 5) Fry highlights the impact and responsibility of design, which inherently is interwoven in shaping futures, and further puts forward the question of how can "a future actually be secured by design?" (Fry, 2009, p. 3).

With "Design Futuring" Fry (2009) engages design into a broader cultural critique of transformative processes considering the entire ecology of modern existence. He challenges and reframes current unsustainable cultural narratives. Calling for a "design intelligence" that is aware of the "dialectic of sustainment" (Fry, 2020, p. 4), acknowledging that everything we bring into being entails consequences. Those can rarely be fully anticipated which make most design problems "wicked problems" (Rittel & Webber, 1973).

The field of Transformation Design (TD) understands itself as a reaction to the above dilemma. Instead of generating artefacts, design is about responsible negotiations within complexity. TD turns "[…] towards a society-centred attitude [it is about] open communication processes, which serve for a creative enquiry into new potentialities […] designed and realised in the form of new organisational structures and cultures, systemic innovations, or collaborative educational forms. The final goal is behaviour change – individually, locally and globally" (Jonas et al., 2015, p. 9). TD can be understood as the means to approach the still unimaginable and its implications, accounting for the degree of involvement and responsibility for the ethical obligations of the designers.

8. Systems of Technology

As transformation designers in a project that deals with a highly complex technological system such as the ATS, we need to acknowledge that technology is embedded in systemic and socio-technical arrangements, including economic, individual, cultural, and political aspects (Carlsson & Stankiewicz, 1991; Geels, 2002, 2004, 2010; Hekkert et al., 2007). While technological innovations brought certain conveniences, they also created severe social and ecological consequences. The notion of sustainable development (World Commission on Environment and Development, 1987) gained momentum against such a backdrop. Sustainability, here, becomes a design problem as technologies are developed with the specific need for ecological sustainment. Steering towards sustainable pathways requires the 'Technological Transitions' of complex systems, which include changes in user practice, symbolic and cultural relationships, policy regulations, the industrial complex, and infrastructure (Geels, 2004; Hekkert et al., 2007).

Thus, for ScenAIR2050, as part of the interdisciplinary SE²A cluster striving for sustainable technological innovations, we argue with Geels' Multi-Layer Perspective (MLP) (2002; Geels & Schot, 2007). It provides a comprehensive framework on how radical systemic change emerges and analyses the complex system interdependencies. It looks at the interaction between three levels: the *niche* in which innovations and experiments emerge, the *regime* in which existing practices and technologies become established, and the *landscape* in which the effects of external factors, including social norms and policies, are defined. To include sustainability in the innovation process, "the analytical challenges around normativity, directionality, and social mobilisation, innovation studies may need to broaden its analytical scope to include additional dynamics related to civil society, social movements and consumer behaviour" (Geels, 2010, p. 508).

Consequently, it takes transdisciplinary and experimental environments for innovations to thrive (Schot & Steinmueller, 2018). Yet, based on the faith "that we can control and take charge of the world in which we live, and that we have sufficient knowledge and technology to do this in a way that will improve our situation" (Sætra, 2023, p. 3), the current predominant technological research is based more on pre-defined "solutionism". The term critiques a narrow-minded focus on technological fixes that understands "all complex social situations either as neatly defined problems with definite, computable solutions or as transparent and self-evident processes that can be easily optimized" (Morozov, 2013, p. 5). Thus, the normative agenda-driven pursuit for sustainable technological solutions raises the question of whether "technology can be used to fix the very problems caused by technology" (Sætra, 2023, p. 5).

Conclusion

Aviation is a complex system in which all actors are interdependent. Today, flying is often interpreted as a metaphor for freedom and technological advancement (cf. Howarth & Griggs, 2006). In a globalised world, travelling by aircraft has become a convenient way to discover foreign cultures or visit family and friends. Long-distance flights seem to be the only reasonable solution to reach a destination in our fast-moving era. Thus, for a systemic transformation towards sustainment, it will need not only viable technical solutions but also the transformation of the social status and mindset on flying.

Shaping Futures by Design

In ScenAIR2050, we understand the complexity of the ATS as a socio-technological system that cannot be easily fixed. The development of alternative futures to explore

design, sustainability, and technological innovation within a broader societal landscape can provide opportunities for mutual learning. With over a year remaining until the end of the project, at this point, we reflect and critically assess the research process to date. As future-oriented research, the initial project objective aims to connect the various engineering projects, drive innovative design solutions, and provide decision support for recommendations on technological research. As tangible outcomes, the different types of scenarios can indicate plausible future paths and interlink disparate technological developments. However, because they are based on qualitative data, their nature is speculative and normative, which is at odds with quantitative research for decision-making. Based on today's common engineering logic for technological development, using mainly quantitative research can create path dependencies (Grunwald, 2014, p. 2; Tiberius, 2011, p. 13), leading to solutions that tend to treat sustainability only as a technological problem.

With our design and futures research approach, we aim to enable such critical engagement and challenge existing paradigms of complex technological systems such as the ATS. We encourage this by applying the design principles of sustainment and user-centred research, using RtD with the APS/F-D-P model for an iterative learning process, as well as integrating thinking in futures. Workshops and surveys are meant to facilitate participation and co-creation in the sense of aspiring towards transdisciplinarity. As stated above, we understand that the results are not so tangible.

Our approach has the potential to identify assumptions and evoke new questions, and it might challenge the current framing of the problem and spark uncertainty. We want to encourage a process of reframing to advance the discussion on transformation beyond tech-solutionism.

Reframing by Design?

It might prove difficult to assess whether ScenAIR2050 contributes to the necessary systemic changes. Nonetheless, the idea is that through its iterative design process, the user-centred scenarios, and the trans- and interdisciplinary touchpoints, it holds the potential to intervene and possibly disrupt current conceptual frames to open transformative viewpoints towards pathways for the unexpected.

The methodology offers the opportunity to challenge the existing logic of sustainability and to broaden the scope by creating narratives that engage both humans and non-humans. This may raise difficult questions that go beyond aviation, such as those of economic distribution: Who will be the passengers in 2050? What status will flying have in the future? What metaphor will flying stand for in the future? Rather than constituting results, design and futures research seeks to open a space of possibility. It aims to promote reflexivity and recognition of the fact that the handling of

complex systems and future developments is based on the principle of uncertainty (Jonas et al., 2015, p. 114 ff).

The question remains if ScenAIR2050 has the agency to foster such transformative research processes and practices through RtD. It includes the plurality of design possibilities and to understand the solution space as an iterative communication process (Hugentobler et al., 2004; Jonas, 2007). The F-D-P Model adds to the exploration of images of diverging futures and engages in thinking in multiple futures. Generally, there is a need to include the management of perspective change in the research design.

While the alternative perspectives and emerging futures from the ScenAIR2050 process may seem intangible to the concrete technical requirements, they are invaluable in highlighting problematic issues that extend beyond the air transport system:

"Problems are more important structurally than solutions, […], for 'problems' do not present themselves spontaneously; the ability to raise questions already implies a conceptual scheme in which something is defined as an issue. It suggests at least the prerumblings of an emerging intuition of what the shape of that problematic world is like and puts us on a path to sharpening the focus of a full-scale paradigmatic vision" (Collins 1986 cited by Geels, 2010, p. 508).

The scenarios can open perspectives that, at first, may seem unwanted for an industry and research agenda solely based on aviation. But considering that only a fraction of the world population has access to aviation for mobility and that there is a growing community of people who avoid flying as a means of transportation, new (design) questions may arise. Is flying only for certain communities? Who is part of those communities—are they privileged or working nomads? What status does air travel have for society or the individual? If we are uncertain of how aviation will develop, what type of aircraft design and infrastructures can be assumed today considering the long development and certification processes? How will these current design decisions affect the futures of aviation? This project can foster the process of generating questions that contribute to breaking current path dependencies and stimulate divergent paths that are essential to developing sustainable innovations.

Considering that the project has one year to go, the discussion in this paper puts forward the possibility of a re-orientation of our research agenda from using scenarios to derive recommendations towards using them as tools to engage other researchers in a reflexive participatory learning process. In our understanding, RtD, and thus Transformation Design, offers the methods and tools that, with an emphasis on the Analysis and Projection phases, go beyond a culmination and visualisation of results in the Synthesis phase. The methodology is meant as a point of departure to discuss and reframe plausible concepts of uncertain futures. The potentially unexpected outcomes can open a space for questions meant to lead to fruitful debates not only on the complexity of problems but also on unusual solutions.

Outlook on Further Research

In order to engage in the second deep transition, a re-orientation of institutional arrangements and governance structures is needed as well as "individuals with capabilities for bridging social and scientific and technological domains (Schot & Steinmueller, 2018, p. 1564).

Though inter- and transdisciplinarity within the SE²A Cluster are fundamental, engaging in collaborative research, giving workshops, or exchanging results with the cluster have brought up the disciplinary boundaries (Bobbe et al., 2023; Nicolescu, 2014). Design and futures research are based on iterative methods and tools with communicative values, calling for a constant exchange and critical feedback between researchers. Yet most of the technological research methods target unambiguous and often computable results. These allow for more goal-oriented research processes, mirroring the need for streamlined development pathways (Geels, 2010; Schot & Geels, 2008).

To overcome such barriers, the ScenAIR2050 project has only peripherally employed didactical means to achieve qualitative results. The project seeks to promote knowledge transfer by probing future images from and for cluster partners, questioning assumptions on factors, and using questionnaires addressing future users. Further, we plan to visualise the resulting scenarios and put them into narrative form. All of the above is done to challenge the framing and foster a *transformative mindset* that enables individuals to acknowledge the complexity and realise the uncertainty of the futures. Within the concept of second-order learning this would mean further research in competence to build "new sets of skills for bridging the social sciences and the science, technology, engineering and mathematics (STEM) fields" (Schot & Steinmueller, 2018). Based on concepts such as Futures Literacy (Miller, 2018) and Education for Sustainable Development (Michelsen & Wells, 2017), the research team identified the need to collaborate with education and communication sciences to develop further formats and evaluations to measure effectiveness. Furthermore, there is a need to establish a typology of competencies required for actors who can drive ethical and radical transformation in the field of technological development.

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Kembali[1] – Return and Transformation. Spotlighting Design Solutions for Indonesia's Plastic Pollution Crisis[2]

Flavia Alice Mameli

Abstract *This article discusses Indonesian efforts to harmonise global ecological concerns with economic growth and local environmental stewardship. It highlights environmental threats to Indonesia's diverse ecosystems from industrialisation, urbanisation, and plastic pollution. Designers, NGOs, and entrepreneurs play an important role in the creation of sustainable products and design strategies involving waste management and recycling innovations. This study spotlights six exemplary ventures: Sungai Watch (plastic pollution prevention), Eco Bali (waste management), Indosole (sustainable, upcycled footwear), Space Available as well as paste_lab (two circular design initiatives addressing plastic waste), and Terra Water Indonesia (water filter system). While acknowledging these initiatives' positive impacts, I initiate a critical discussion raising questions about long-term sustainability, circularity and (un)affordability for local Indonesian communities. Nevertheless, these endeavours in sustainable design offer important insights into the global relationship between SDGs and design practices. Importantly, we must avoid 'sustainable design colonialism', which could undermine equitable global transformations.*

Author keywords *sustainable design of the Global South; sustainable design in Indonesia; design for the anthropocene; SDGs and design practices; colonialism and design*

1. Introduction – Harmonising Global Futures with Ecological Stewardship

Indonesia consists of an archipelago of approximately 17,000 islands, celebrated for their biodiversity and cultural wealth, and the fourth largest population on the planet. The country is currently at a critical point in its environmental sustainability

1 Indonesian word for "return", also used in the context of recycling.

2 This article reports on the early stages of this research project.

endeavours. Its diverse ecosystems (e.g., rainforests, extensive coral reefs, and multifaceted marine resources) are under threat from rapid global industrialisation, urbanisation and international resource demands (Wicaksana & Santoso, 2023). Plastic pollution is an especially severe environmental problem in Indonesia, the world's second-largest plastic polluter after China (Pada, 2023). This "plastic crisis" (cf. Simon, 2023; Kwon, 2023; Law & Schegg, 2023) implicates the global economy of resources and consumerism; it is also directly linked to Indonesia's national waste management and recycling processes. Indonesian waste management comprises formal and informal systems. Informal waste pickers significantly contribute to the collection of recyclables (Sasaki et al., 2020); however, informal waste management also regularly involves the noxious burning of trash in private households (Mayang, 2020). In this context, Indonesia's challenges in achieving SDGs include infrastructure issues, dependence on open landfill sites, and waste being discarded into rivers. Conquering these formidable obstacles requires a comprehensive approach that fuses scientific and design expertise, cultural subtleties, and farsighted economic strategies.

Indonesia's sustainability policies are of paramount significance and have the potential to decisively shape the nation's future trajectory. The nation's steadfast commitment to the United Nations Sustainable Development Goals (SDGs), its active participation in international environmental agreements (United Nations, n.d.), and its endeavours to promote responsible resource management underscore an awareness of environmental preservation. However, these efforts still largely depend on private sector and non-profit initiatives. In particular, heterogeneous design professionals assume a pivotal role in combatting environmental crises. A growing number of Indonesia-based designers, NGOs, and entrepreneurs are working on sustainable products and design strategies. They are uniquely poised to create products that infuse the principles of circular economy, renewability, and energy efficiency to resonate both locally and on the global stage. They seek ways to meaningfully reduce the country's environmental footprint while also fostering economic growth.

This paper presents snapshots of six such initiatives, each revolving around issues of plastic pollution and waste management, from a design anthropology perspective. These cases allude to a possible course for Indonesia to foster sustainable and regenerative practices, while also cementing a legacy of responsible development in the Global South. I celebrate these positive developments but also pose critical questions relevant to the wider challenges and opportunities of transformational design.

2. Discussion – Navigating the Path to a Sustainable Future

Eight years have passed since the UN declared the 17 SDGs for a more sustainable world. Indonesia has made some successful strides toward these goals. For instance, it has reduced poverty rates and improved education accessibility in rural and remote regions; renewable energy promotion and the fight against deforestation have also yielded some positive outcomes. Nevertheless, several challenges remain: air pollution, marine conservation, and access to fundamental services like waste management lag. More extensive policies are needed to ensure rural and marginalised communities can benefit from the SDGs (Ministry of National Development Planning, 2019).

Despite a legally established Green Party for Indonesia[3], policies encouraging environmental protection and sustainability are still underpromoted. Additionally, Indonesia must engage in the persistent balancing act of guaranteeing sustainable economic growth while safeguarding distinct biodiversity and natural resources. This has resulted in rather slow movement toward sustainable futures from Indonesian authorities. Nevertheless, a fast-growing heterogeneous group of entrepreneurs, designers, and activists are pursuing their own SDG missions, many of them specifically around plastic pollution and recycling[4].

The first spotlighted venture is *Sungai Watch*, a Bali-based environmental organisation founded by three Generation Z activists in late 2020. The name "Sungai" is derived from the Indonesian word for river. *Sungai Watch*'s mission is to safeguard and rehabilitate Indonesia's rivers using simple technologies that prevent plastic pollution from entering the ocean. The NGO installs river barriers as an optimal, budget-friendly strategy for eradicating plastic pollution. They claim this can also stimulate community involvement (see Figure 1) and cultivate a sense of ownership and accountability for preserving unsullied waterways over time.

Sungai Watch has been successful in Bali; it has positioned 180 barriers and collected over 1.4 million kilograms of plastic waste (Sungai Watch, 2023). The floating waste barriers are simple devices designed to physically intercept river waste. They are constructed in-house and were re-developed after the rainy seasons resulted in new lessons learned. *Sungai Watch's* 2022[5] annual report states that the NGO hopes to become a zero-waste venture soon. It now also upcycles the non-recyclable plas-

3 Partai Hijau Indonesia (PHI), founded in 2012.

4 In this context, the main SDGs targeted are: SDG 6 (clean water and sanitation), SDG 12 (responsible consumption and production) and SDG 14 (life below water).

5 Available at: https://www.canva.com/design/DAFaHIwBG80/2xd9fWx65Myt3K2EooEcRw/view?utm_content=DAFaHIwBG80&utm_campaign=designshare&utm_medium=link&utm_source=viewer

tic it collects using an in-house shredding and pressing procedure and is seeking innovative processing methods for this 'new' material.

Figure 1: A former illegal landfill in Bali was cleaned and transformed into a garden by Sungai Watch, in collaboration with the regenerative farming project Astungkara Way. Photo: Flavia Mameli (2023).

While its local impact is undoubtedly immense, questions exist about *Sungai Watch*'s long-term impacts. If households stop throwing their waste into rehabilitated rivers, might they start burning more trash? How sustainable is the practice of cleaning rivers when systematic and affordable solutions for waste management have not yet been fully established?

Another venture operating in this context, *Eco Bali* (see Figure 2), was founded in 2006 by an Italian-Indonesian couple with a mission to address the pressing

environmental issues caused by waste in Bali. The organisation has helped reduce the amount of waste sent to landfills and raised awareness about the importance of responsible waste management among the local population. *Eco Bali* operates a network of waste collection points where residents and businesses can drop off their (separated) recyclables and non-recyclables; it also runs a pickup service in selected urban areas. *Eco Bali* also educates the local community about waste reduction, recycling, and responsible disposal through workshops, seminars, and awareness campaigns. The combination of education, recycling, and community involvement makes *Eco Bali* a model for sustainable waste management initiatives in other Global South contexts facing similar environmental challenges.

Figure 2: Eco Bali waste collection point in Canggu, Bali. Photo: Flavia Mameli (2023).

The regular waste disposal organised by local municipalities is quite affordable for the middle-class Indonesian population. However, this waste is not separated and hardly ever recycled—just taken to the nearest waste dump. *Eco Bali's* prices are relatively high, depending on the volume of waste and frequency of collection, so we can assume that most Balinese will continue to use the municipal waste disposal, if any (but further research is pending).

Numerous environmental ventures highlighted in this article come from the realm of product design. For example, *Indosole* is a sustainable footwear enter-

prise renowned for its ecologically friendly and socially responsible approach to manufacturing footwear. The company aims to increase awareness about the environmental consequences of tire waste while advocating ethical, sustainable fashion choices. They specialise in producing sandals from upcycled and recycled materials, particularly repurposed discarded tires (see Figure 3).

Figure 3: Indosole children's shoes. Photo: Flavia Mameli (2023).

The tires are extracted from landfills and recovered into the soles of footwear. This upcycling process reduces waste and creates a durable, long-lasting sole material. *Indosole* footwear is handmade in Indonesia, supporting local craftsmanship and job creation. The brand reduces its environmental impact by using low-impact manufacturing practices and sustainable packaging materials. *Indosole* provides fair wages and a safe working environment to create a positive social impact in the communities where its products are made. Despite these multiple measures, there are two aspects that counteract the overall effort towards sustainability: Firstly, the retail price of *Indosole* products in boutiques or online is very high compared to similar footwear and certainly not aimed at the average Indonesian citizen. By way of comparison, the average monthly income in Indonesia in 2022 was US$192 (CEIC, n.d.). This is an increase from the previous figure of US$170 for 2021. An average *Indosole* flip-flop costs between US$45 and US$60. In addition to the high selling price of the products, a look at the actual material composition of the shoes is also revealing (Indosole Indonesia, n.d.): while the sole is made of 100% recycled tire material, the

footbed consists of 30% natural rubber, 30% recycled EVA and 40% EVA. EVA stands for ethylene vinyl acetate, a modified and more complex version of plastic that is usually difficult to recycle as it requires a special recycling process.

Figure 4: The Space Available Museum façade in Canggu, Bali. Photo: Flavia Mameli (2023).

The second exemplary upcycled product venture is *Space Available*, an organisation devoted to circular design. *Space Available* converted a Bali building into a 'museum' and laboratory in collaboration with Indonesian architects *Sidarta and Sandjaja*[6] (see Figure 4). The building's façade was crafted from 200,000 recycled plastic bottles to highlight the plastic waste problem in Indonesia. *Space Available* serves as an exhibition space, recycling hub, and 'upcycling bar.' It is an experimental institution that aims to become a repository of anthropogenic design. It conducts diverse workshops on developments in plastic recycling, biomaterials, and circular living. *Space Available* also sells fashion and interior design products and collaborates with various international designers and artists to market sustainable design in 'cool' upscale products. Seeing the brand's emphasis on being fashionable, a critical reflection in terms of sustainability could argue that circularity is merely promoted as a

6 https://sidartaandsandjaja.id

style and as part of the brand, rather than incorporating all associated implications. This aspect is visible especially in comparison with *paste_lab*[7], another Indonesian start-up venture, located in Yogyakarta on the island of Java.

Visiting *paste_lab's* workshop in October 2023 seemed like the 'messy version' of *Space Available,* with plastic shredding, melting, and pressing happening all at once in a noisy, smelly, and crowded garage (see fig. 5). I was surprised by the similarity of upcycled products being developed here and was lucky to have a short informal conversation with one of the two start-up founders. He revealed that although all sorts of styles, colors and patterns of upcycled plastic would be possible, the almost 'iconic' look of sprinkled material is the most requested one from customers. Furthermore, I learned that the founders managed to establish several B2B-cooperations with local businesses like hotels and restaurants to pick up their plastic waste, to manually clean it, and to shred it into their raw material as a truly circular business model.

Figure 5: paste_lab workshop in Yogyakarta, Java. Photo: Flavia Mameli (2023).

What I also learnt in this context is that, unlike the experience a visitor might have in the clean and cool museum of *Space Available*, this kind of upcycling is a rather dirty business— with workers exposed to the constant smell of melting plastic and the micro-plastic dust that is inevitably released into the air when sanding

7 https://www.instagram.com/paste_lab/

the newly formed and cured upcycled plastic panels. Acknowledging such circumstances underlines that circularity does not necessarily mean sustainability, as Blum et al. (2020), among others, have argued.

Another eye-opening example of Indonesian eco-entrepreneurs deliberately targeting an upscale consumer group is *Terra Water Indonesia*, a company operating in the realm of SDGs 6 and 12. Its flagship product, a Bali-made water filtration system made entirely from natural materials such as clay and ceramics, is a cleverly designed product that addresses the urgent need for clean water among the majority of Indonesia's population. Most Indonesians rely on buying water by the gallon, with the most popular brand being *Aqua*, owned by the *Danone* group. Against this backdrop, and addressing another pernicious aspect of the Global South's entanglement with Western corporations, a project like *Terra Water Indonesia* must undoubtedly be highlighted as a much-needed initiative in Indonesia's efforts to provide clean water. Once again: The so-called *Terra Ceramic Filter* is a high-priced water filter that remains out of reach for most Indonesian citizens. What's more, the way it's marketed on the company's website suggests it's more of a design object for well-being than a useful tool for drinking safe well water. Interestingly, however, *Terra Water Indonesia* has developed its own solution to bridge this gap between a wealthy elite of consumers and comparatively low-income Indonesians: As a second, low-cost version of its filtration system, the company sells a different product called *Terra Lite Filter*, equally safe and consisting mainly of a plastic bucket, for customers with little money to spend. Tellingly, some of the visual marketing of this 'second product' is quite different from the first. Instead of a sleek object placed in a well-designed (but devoid of any human trace) tropical kitchen, we see a supposedly Indonesian man posing happily next to his plastic *Terra Water Indonesia* filter system in a sunny local setting[8]. Could there be a two-tier society of sustainable products that needs to be investigated?

3. Conclusion

Social and sustainable product design enterprises do beneficial work that addresses Indonesia's environmental challenges. However, questions remain about their ostensible sustainability and their responsibility on the consumer side. *Indosole's* footwear and *Space Available's* design items are comparatively expensive and not affordable for most Indonesians. While these items are mainly (or even exclusively) sold in Indonesia, both brands are marketed to and favoured by Western consumers who value socially responsible and eco-friendly product design. These customers

8 This statement is based on an analysis of *Terra Water Indonesia's* product photos to be found online in October 2023.

are willing to spend considerable amounts on a luxurious and comfortable sustainable lifestyle only a few can afford. In this context, the statement made in a recorded workshop meeting of *Space Available* founder Daniel Mitchell with the renown Djane Peggy Gou and two other participants, "Recycling is not a compromise, it is an upgrade" (Space Available, 2021) is not without a certain irony.

Furthermore, five of the six ventures spotlighted here were (co-)founded by Westerners residing in Indonesia. It should be noted that numerous companies founded by Indonesians focusing on recycling and upcycling plastic waste as well as on many other aspects of SDGs do exist, like the highlighted venture *paste_lab*, but they are excluded here due to the limitations of space. The selection of examples is a deliberate choice, intended to stimulate critical discourse at this early stage of the research. It seems clear that companies founded by Westerners know how to market themselves to achieve more outreach – an (international) visibility that is necessary for the long-term success and growth of these companies.

As the global design community grapples with pressing anthropogenic environmental challenges, Indonesia's sustainable design landscape could become paradigmatic for design professions in the Global South. Many promising local endeavours are infusing design with an ethos of sustainability, encouraging cross-sectoral collaboration, fostering local initiatives and embracing robust policy frameworks. Sustainable design is in itself a social task with the potential to create social advantages and disadvantages. We need to be wary of the hidden pitfalls of a potential 'sustainable design colonialism' that cannot coexist with long-term and equitable global transformation. I use the term sustainable design colonialism to describe and critique products and practices that stylise sustainability and create 'eco-luxury' rather than a truly circular and socially as well as environmentally beneficial product or innovation. While long-established terms and buzzwords such as 'ecological colonialism' or 'green colonialism' have been widely discussed in multidisciplinary contexts, circulating around global sustainability relations and describing intensified power imbalances from the Global North to the Global South under the guise of environmental protection (Crowe & Shryer, 1995; Grove, 1995), the term sustainable design colonialism refers to more local spheres of action, as some of the spotlights described aim to highlight.

In the context of the conference track *Crises, Literacies and Practices*, a critical reflection on such underlying dynamics that could undermine equitable global transformations needs to be taken into account when assessing the actual impact of sustainable design practices. In this regard, at this early stage of the research, I can summarise that there is no shortage of Indonesia-based design professionals, entrepreneurs, and activists who are putting numerous literacies into practice; however, it is also clear that sustainable design practices in and from the Global South can never be fully understood without taking into account their global contexts.

Statement on compliance with ethical standards:

The work strictly adheres to established ethical guidelines, including informed consent, confidentiality, and the responsible handling of sensitive data.

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Chapter 3 / Crisis and Communities

This chapter explores how designers can work in partnership with other stakeholders to form alliances and allyships that address crises with novel knowledge, tools, methods and values. This Chapter accommodates case studies that examine how designers can collaborate effectively with other disciplines, stakeholders, and ontologies to develop and implement strategies for addressing crises, as well as those that explore the challenges and opportunities of interdisciplinary collaboration in this context. In addition, this Chapter includes topics related to how designers can work with impacted human and non-human entities, stakeholders and marginalized communities to address crises and how inclusive and equitable design processes can usher positive social change through visual and tangible tools, transdisciplinary approaches and collective design.

Visual Communication Bridging Intercultural Barriers: Visual Methods Supporting the Social Inclusion of Young Refugees

Ágnes Jekli

Abstract *This paper explores the possibilities of graphic languages in an intercultural context while analyzing the potential of creative methods when working with refugee youth. The practice-based aspect of this research is undertaken with Open Doors Hungary, a community-based design project that creates a programme for unaccompanied minor refugees. The aim of Open Doors is to help refugee youth integrate into Hungarian society, and develop their means of communication and quality relations with the host society.*

Refugee youth arriving in Hungary face serious problems: the loss of home and community, the traumas suffered during the journey, the cultural differences, and the lack of a common language all make their social integration extremely challenging. These challenges are further exacerbated by xenophobia and stereotypes against foreigners present in some parts of Hungarian culture. Social inclusion requires frequent contact with the local society, and unaccompanied refugee youth need new tools (cultural knowledge, language skills, intercultural skills) to overcome their disadvantages.

Since 2013 the author has been working with refugee youth using the methods of participatory design tools such as regular creative sessions, intensive workshops, and 8 intensive (media) camps based on the integrating role of creativity and art. During these sessions young refugees and their Hungarian and European peers got to know different visual communication tools and created common messages in the form of videos, animations, photos, posters, booklets, murals. Through these activities, refugee youth become part of the design process, and their choices are the basis for the final result.

Based on theoretical research and field experiences, this paper argues that design thinking and the creative process allow interactive cultural exchange, sharing of values, safe and open discussions, and community building. As a global language, visual communication can be a tool for intercultural communication, storytelling, and self-expression. The opportunity for refugee youth and their Hungarian peers to work in intercultural teams develops new competencies, and creates shared ownership and community.

Author keywords *visual communication; intercultural collaboration; refugee and migrant youth; participatory design; community-based design*

1. Introduction

The global increase in the number of asylum seekers and refugees over the last decade has been one of the challenges for our society. Hungary—due to its geographic location—has been one of the main transit countries towards other member states of the European Union (IOM Hungary, 2023). Barriers to integration are exacerbated by xenophobia and stereotypes against foreigners present in some parts of Hungarian society, thus creating conflicts between members of the host society and newcomers (Gyulai, 2014, Sik, 2022).

This study focuses mainly on unaccompanied minor refugees and young migrants arriving to Hungary between 2013–2023. Minor refugees arriving in Hungary are a special group, as their situation is not only determined by the inherent characteristics of being a refugee, but also by the fact that they are protected by the childcare system. Their long and dangerous journey and the uncertainty of the asylum application process only exacerbate the so-called "post-traumatic stress disorder", which may have been caused by the trauma of losing their roots or their human connections at home. The cultural differences, and the lack of a common language all make their social integration into the host country extremely challenging. Social inclusion requires frequent contact with the local society, and they need new tools (cultural knowledge, language skills, intercultural skills) to overcome their disadvantages (Magyar Helsinki Bizottság, 2023).

The author—coming from a graphic designer background—together with her architect partner Erzsébet Hosszu is the co-founder of Open Doors Hungary, a community-based social design project working for intercultural dialogue with the tools of visual communication, placemaking and design.

This study—as part of an ongoing PhD-in-practice research—connects theory and practice and uses a mixed-methodology approach: on the one hand, relying on literature review on the topic of intercultural visual communication and existing practical methods, on the other hand, examining the experiences of young refugees with visual communication, exploring its potential as a tool for facilitating intercultural understanding and integration through a practical social design project, Open Doors Hungary.

The review of the relevant literature will establish the context, including the role of visual communication in bridging cultural barriers, and also the factors that can influence the intercultural understanding of images.

In addition to the literature review, the author is including her 10 years of field experiences, using the methods of participatory and community based design.

The purpose of this study is to understand how visual communication and community-based design can contribute to the process of social inclusion of young refugees, and how design can create a platform for intercultural dialogue.

2. Intercultural Communication

Cross-border migration processes always involve an encounter with a new culture. In addition, the issue of interculturality may arise within national borders, in the case of small geographical movements or movements between different social groups, which also entail interaction between two different cultures. Thus, the issue of social integration and its relationship with culture concerns a much wider audience than refugees and asylum seekers.

Cultural differences can manifest themselves in different forms: in the use of space, time management, the most basic customs, manners, human relations, communication or metacommunication, conflict management, intimacy and publicity, taboos, religion, attitude to power, worldview or the most fundamental values. Cultural differences become most evident in different visible, tangible signs (Kapitány, 1993).

Culture can be seen as one of the major integrating and socializing forces, defined by Haviland (1987) as the set of rules and norms of a society that are considered to be correct and accepted by the members of that society. The more integrated the culture itself, the greater its integrating power, since *"the very essence of culture is to ensure the integration of society"* (Hidasi, 2004). The concept of culture is closely related to communication.

Intercultural communication is nothing other than the interaction of people from different cultural groups. This does not necessarily mean different national groups, but in the era of globalisation and in the midst of migration processes, there is a growing need for intercultural competences. We no longer need to cross a national border to encounter another culture, and learning culture is as essential to successful interaction as learning a language, and cannot be avoided in our everyday conversations and work.

> "To have an effective and smooth conversation with a foreign partner, or to read a foreign novel, or even to understand an advertisement, or to be successful in marketing, these are all essential skills." (Hidasi, 2004, p. 25)

Culture is therefore not an innate quality, but an acquired and learned set of knowledge and norms. This fact makes it possible to learn culture and acquire intercultural competences.

3. Social Inclusion and Visual Communication

In 2014 the European Commission published the European Modules on Migrant Integration, with the aim to "provide a common language and a reference framework regarding integration" in the three given areas (European Commission, DG Home, 2014):

1. Introductory and language courses;
2. A strong commitment by the host society; and
3. The active participation of immigrants in all aspects of collective life.

These areas are all relevant for the topic of this study. The closest link and one of the most important overlap between visual communication and the social integration of refugees and migrants can be seen in the potential of language learning.

People living away from their home country inevitably become part of the new host society—forming human connections, friendships and experiencing the culture of that country through their social contacts. To understand the new environment more deeply, they also encounter the need to know the language of that country. Even if English or another language is sufficient for their work, studies and daily life, they are still confronted with the need to learn Hungarian language and culture.

Language has many functions that play a very important role in the social integration of an individual or a group. It is an important tool not only for everyday communication and administration, but also as a prerequisite for participation in education or the labour market. It is also a symbol: knowing the language of a society is for many people a symbol of belonging to that group. The lack of language skills not only hinders the understanding of verbal communication, but also makes it difficult for both parties—the person seeking to integrate and the host society—to develop deeper social relationships, to develop new behaviors and to break down prejudices and stereotypes.

As a result of empirical research conducted in 2006 by the Working Group on Intercultural Conflict and Social Integration, four levels of social context for migrants' foreign language learning were identified: (1) the migrant's family background or personal history of emigration, (2) country of origin, (3) host country, (4) ethnic context (Várhalmi, 2006).

Among other things, it has been found that unfavorable social circumstances in the absence of language skills mutually reinforce each other, and that there are significant differences between generations in the knowledge of the language of the majority society, regardless of origin. The same research also finds that those with less secure language skills have significantly lower earnings and much higher unemployment rates (Esser, 2004).

Thus, knowledge of the language of a country can be seen as a key to social integration.

Because of the semiotic aspects of visual communication, images can be used to facilitate language learning at different levels of the language, such as letters, words, and sentences.

4. Visual Communication

> "Words divide, pictures unite." (Neurath, 1936)

Visual communication, the language of images, has the potential to bridge language barriers and promote intercultural understanding—which is extremely important when the participants of the communication process do not share the same language or culture. But is this not too ambitious a statement? Do people from different cultures and social groups really understand the same things in the same way? This research intends to find and define a visual language that can bridge cultural and linguistic barriers. But to define this, we need to understand the barriers of visual language, the barriers to universal understanding, the possible aspects that may make it difficult to read images from a cross-cultural perspective.

To analyse the 'reading' of images, we need to examine their relation to written language by examining semiotic aspects.

The dominance of verbality and the written medium over visuality in our modern society is evident. Literacy and language represent a specific historical stage in the formation and development of different civilizations, the ability to read and write has separated and distinguished social classes, and the social significance of literacy is still decisive today. But how do we relate to visual literacy?

While the perception and recognition of images is indeed a universal ability, reading them and decoding their meaning is far from being so. Understanding the pictorial signs that make up visual language is a social process, one that presupposes a social, historical and geographical context, and one that requires prior experience and knowledge.

> "Like verbal communication, pictures represent an understanding of the world acquired by members of a certain group, and thus the meaning readers construct from a given image may depend largely on knowledge they share with group members." (Kostelnick, 1993)

According to Charles Kostelnick (1993), there are three levels of social context that influence the perception of images:

1. cultural context – i.e. the shared worldview and values of the group members
2. conventional context – i.e. members of the group share a particular discipline or the visual language of a particular discipline or special topic
3. immediate context – i.e. the situation in which the participants use the particular image

Several studies (Kostelnick, 1993; Gibson, 1954; Goodman, 1976; Jones & Hagan, 1980) introduce the concept of the "naïve eye", i.e. the reader who is not yet familiar with the world of images, the "visual illiterate", so to speak. These studies disagree as to whether the perception of images is analogous to the perception of real objects (Gibson, 1954) or whether it is necessarily a learned skill (Goodman, 1976). Gibson, later joined by Jones and Hagan (1980), argue that the 'naïve reader' of images, such as members of intact cultures isolated from the modern world, or young children, needs very little experience to perceive and recognize images, and thus considers this first stage of image reading to be a plausibly universal ability. In contrast, Goodman rejects the notion of the 'naïve eye', arguing instead that visual communication also embodies a convention-based language that changes from time to time and from culture to culture.

Writing with images

Although most of the existing writing systems of our world are not primarily pictographic in nature, our everyday lives are filled with images, including functional images, which are often as challenging to read as verbal writing systems are to decipher. The reading of images can be challenging both at the level of 'letters', i.e. individual pictorial signs and at the level of 'sentences' and 'texts', i.e. pictorial compositions or collections of narrative images. The factors discussed below, the cultural context, including in particular spoken and written language, the context of the conventions recognized by the group, and the immediate context of the situation, all influence the cross-cultural interoperability of visual communication at all levels.

The perception of images and the identification of their elements are, for the most part, truly culture-independent, but their reading is already highly dependent on the cultural and linguistic context and the writing system used by the language in question. The reading of images in different cultural contexts is therefore influenced by a number of factors, such as the writing system of the culture, the direction of reading, the degree of abstraction, and the symbolic meaning of the basic forms, signs, and colors (Radtke 2021; Pater 2020).

Figure 1: Open Doors workshop, 2014 (photo by the author).

5. Practice-based Methods

In the past 10 years, the author has organized 10 creative camps and weekly creative sessions, with the participation of young refugees and migrants and their Hungarian and European peers. During these sessions, participants learned about different visual communication tools and created common messages. Design thinking and the creative process provided a platform for interactive cultural exchange, sharing of values, safe and open discussions, and community building. The graphic media used during the workshops included:

1. Signs, pictograms, abstract elements

As we can establish from the relevant literature, images can help us communicate, express thoughts and emotions, and also they can help to represent ourselves. During the work with refugee and migrant youth, drawing simple images, pictograms and abstract elements (forms, colors) was crucial help in communicating with each other. As part of a getting-to-know each other process, youth created signs that represent themselves, their community or their culture.

Signs and pictograms served as visual aids in more formal language classes expressing both concrete symbols and abstract thoughts, therefore images were also the tools of language learning which is a key element in the social inclusion of migrant and refugee youth.

Figure 2: Open Doors workshop, 2014 (photo by the author). Videos and short animations

Open Doors Hungary has organized 3 local and 3 international media trainings and several local workshops in the past 10 years. During the local events, Hungarian highschool students and refugee youth were introduced to different techniques (graphic design, photography, animation, video) and then worked together in groups to create visual messages with the help of art student mentors.

The methodology of the locally developed media workshops was also applied in an international context: the Change for Media—Media for Change international youth exchange was organized under Erasmus+ programme and brought together 25 refugee and European youth from 5 countries.

Figure 3: Change for Media – Presenting the future, 2018 (photo by the author).

2. Photography

Creating photos is a well-known technique in visual anthropology. They can help the creators to share fragments of their lives with a larger audience, to observe, map and get familiar with their new environment, and to communicate emotions and abstract feelings. During the workshops of Open Doors, participants usually work in pairs or small mixed groups, therefore they can share different perspectives and ideas also during the creative process.

3. Posters

Creating posters is one of the most traditional platforms of graphic design. In 2021, Open Doors organized a Women's Day poster workshop, where participants were invited to create a poster about an inspiring woman from their culture. During the workshops, participants used collage and paper cut-out techniques to create visually attractive posters with strong messages. Placing the posters on the street provided a platform for participants to connect to the place, share a part of their culture and identity, and gain confidence.

4. Zines, comics, booklets, books

Zines are traditionally self-published magazines containing images or texts, that are usually photocopied into physical prints for small-scale distribution. Folded into multi-page booklets, zines are an excellent tool for storytelling. The story can be told in the form of collage, comics or typography. In the past years Open Doors organized

monthly zine-circles, where participants create individually minizines following a common keyword, and they share the results with the others in the circle, discussing topics important to them.

In 2020, during COVID regulations, Open Doors organized a series of online cooking events, which resulted in a tangible product—a cookbook collecting recipes of refugees and migrants living in Budapest.

5. Game design

Playing traditional games can provide a good platform for intercultural dialogue, they can be a way of sharing culture in an informal and playful way. Teaching games means to share the rules and attitudes of a certain system. Designing games together can lead to setting a new system of rules. Redesigning the visual elements of a simple game means to collectively accept a set of rules, but personalizing it according to common needs and shared preferences.

6. Screen printing

Screen printing is a traditional printing technique that provides opportunity for participants to mix and personalize already prepared patterns resulting in a visually coherent outcome. The content of the patterns were developed during community brainstorming events, and some of them include visuals drawn by multiple members of the community. The technique was used on bags, t-shirts, and pullovers that participants could personalize using the already existing frames. The results became their own property created in a community.

7. Murals

Murals are grand-scale site specific paintings that are not only platforms for intercultural collaboration, but also serve as a communication surface that can preserve a common message for the future and can make connections easily with the outside viewer. Between 2013 and 2023 more than 10 community-designed murals were created by the participants of the workshops. The murals were designed with a democratic decision making process, synthesizing the ideas of the whole community.

Figure 4: Open Doors screen printing workshop, 2019 (photo by the author).

Figure 5: Open Doors – Art for Development camp, 2013 (photo by the author).

The methods of Open Doors Hungary consist of diverse tools; besides the creative workshops, various community events are also organized by the members of the community. Photo and video documentation were used to record the workshops and events, and tangible results were created such as books, posters, videos, games and murals, that were analyzed during the research.

6. Results

The findings of this study suggest that visual communication can be an effective tool for bridging intercultural differences among young refugees and the members of the host society. Visual aids served as a tool for mutual understanding and self-expression, and also tools for learning new languages and new skills.

Recurring motifs

During the workshops participants created videos, photos, and games using visual symbols. In the past 10 years some motifs and symbols have been repeated. These motifs unfold larger topics that serve as common interests of the refugee and the European youth such as—*the journey, family, home, equality, tolerance, being human, nature, food, music, hopes and dreams.* These findings can serve as topics to be channeled towards further workshops, and as a base of further research.

Visualizing future hopes and dreams

Through different storytelling exercises participants opened up not only about their past, their culture, their journey and many times painful memories, but also started talking about their future hopes and dreams. Putting it in visual forms such as

videos, photos or zines can be a powerful tool to set new motivations and goals. For refugee youth this can be a crucial step toward healing.

Visibility

Minor refugees make an almost invisible group. Fleeing from dangerous situations or escaping persecution often prevents them from sharing photos online, to show up publicly in the media, and to present themselves as equal contributors to our society. Different visual techniques may provide different levels of abstraction that can offer a way for refugees and vulnerable groups to express themselves in a safe and protected way. Short animations created by participants of the media workshops shared their stories of fleeing and their thoughts on their new lives. Videos and animations created during the workshops were shown in public on the closing events of the workshops, and some were broadcasted by the Hungarian National Television reaching a wide audience, giving visibility to underrepresented groups and issues. These videos are credible and important documents made visible for a larger audience without endangering the life of their creators.

Figure 6: Open Doors Youth Voices, 2015 (Photo by the author)

Improved language skills

Participants had the chance to learn and practice their communication skills in formal language classes as well as non-formal educational workshops and community events through the platform of visual communication and design. Improved language skills means better connection to the host society and better understanding of local values, which can result in better opportunities for social inclusion, better chance to participate in the education system or the labor market. Communicating through images improved not only their verbal, but also the non-verbal communication skills of participants.

Learning about local values

Designing together means making decisions together, and following up on these decisions in the realization process. Decision making in an intercultural team is a difficult process, especially if it involves participants with very different cultural backgrounds. Different opinions are influenced by different experiences, perspectives, and languages. Working in small teams of 3–4 people through small design tasks, participants had the chance to speak up, share their opinion and make decisions in a democratic way. For many participants arriving from different cultures and non-democratic systems this was an important exercise about European societies and democratic decision making.

Stronger interpersonal relations – stronger communities

As all the workshops and programs of Open Doors are realized in a two-way process, members of the host society—Hungarian and European youth from diverse backgrounds—were involved. Through creating together they learned about each other's backgrounds and motivation, they gained personal experiences that broke stereotypes. During the workshops, especially in longer (7–14 days) events, participants formed quality relations with each other, strengthening locally the social network of migrant youth. Together they became part of a stronger community, where they are multipliers of the newly learnt skills.

A more inclusive host society

As Hungarian and European youth were also involved directly in all the workshops, they had the chance to gain first hand experiences with migrant and refugee youth. They learnt about their cultures, life stories and struggles, discovered common interests and formed friendships.

Tangible results of the workshops, such as cookbooks, posters, videos and animations, reached a wide audience within the host society. These visual contents raised empathy, shared cultural values and knowledge.

7. Conclusions

The purpose of the research was to explore and understand how visual communication and community-based design can contribute to the process of social inclusion of young refugees, and how design can create a platform for intercultural dialogue.

The already existing literature proves that although the reading of images might differ in different cultures, they can still serve as a universal language and bridge communication barriers. Visual communication can serve in different areas of the integration process of young migrants and refugees, such as language learning and their inclusion to a community, and it can also influence the attitude of the host society.

According to the findings of the participatory research, visual communication and graphic design could benefit the inclusion of migrant youth by providing a common language, giving visibility to an invisible group, helping them in visualizing future hopes and dreams, learning Hungarian, learning about European values and customs, and provided a platform for intercultural communication between migrant youth and their Hungarian and European peers creating stronger interpersonal connections and stronger communities.

As it is an on-going PhD-in-practice research, the author will further analyze the role of visual languages from a semantic and semiotic point of view, and will categorize the factors that influence intercultural understanding. The author will summarize the methods and the findings of the research in a methodological handbook that can be shared with other stakeholders— -designers, social workers, institutions.

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More-than-Verbal Tools: Making Participation Tangible and Embodied through Ad-hoc Design Tools When Working with Migrant Women

Seçil Uğur Yavuz, Merve Bektaş, Teresa Palmieri, Ingrid Kofler, Aart van Bezooijen, Gianluca Tenin

Abstract *This paper illustrates the process of developing dialogical artifacts and addresses the reflections on approaching complexity when working with migrant women for a social innovation project. The project aims to support women's empowerment in their social, economic, and professional achievements through a year-long training program. The interdisciplinary team's role was to monitor and evaluate the women's satisfaction and integrate their needs and wishes into the project. Since the women have different cultural backgrounds with different language skills and some have low literacy, using traditional verbal-based tools such as interviews, surveys, and questionnaires was very challenging and did not lead to a deeper understanding of the participants' needs. In order to make this process more inclusive and open to More-than-Verbal expressions, we developed several ad-hoc tools that helped us to facilitate participatory processes and get valuable insights from the women. To enable communication and gather information, we developed a card set for facilitating a questionnaire, a performance-like activity involving body, movement, and making, and created a field notes template for the participatory observation that helps the observer to include women's lived experiences. Our paper addresses our case study while explaining the challenges when working with migrant women and the ad-hoc solutions we developed to tackle the emerging crises.*

Author keywords *migrant women; empowerment; crisis; social design; design tools*

1. Introduction

This paper addresses a case study based on a project called DIL (District Innovation Lab) in which dialogic tools and methods were developed and adapted to reveal the needs, wishes, and desires of migrant women as project participants. DIL was created within the historical socio-cultural action of the non-profit social cooperative OfficineVispa (OV), operating since 1993 in the urban neighborhoods of Bolzano,

South Tyrol, Italy. OV develops and manages various community development spaces and projects with particular attention to predominantly social housing neighborhoods. Their interventions offer the inhabitants physical, relational, and collaborative contexts and spaces. OV aims to develop a critical and civic sense, to create links between the individual, the community, the territory and the socio-cultural network, stimulate participation in public life and value urban spaces as a common good. These objectives intend to reduce the sense of dependency and vulnerability, the risk of solitude and isolation, as well as the risk of neglect and lack of responsibility to the community network and space. In such a context, the project DIL—designed and managed by OV in partnership with a training agency, CiEffe, and the Faculty of Design and Art of the Free University of Bozen-Bolzano (unibz)—offered an experimental framework for social innovation and focused on migrant women, living in Bolzano, Italy, of working age and in a situation of fragility. In their long-standing work on community development and training courses, both OV and CiEffe have developed experience in working with the target group while unibz brought to the consortium expertise in participation. In the project, OV, as project leader, oversaw the entire project, identifying and engaging participants, adjusting methods, contents and processes to emerging needs and expectations and allocating space. In addition, they worked on connecting the training program to the broader local socio-cultural network. CiEffe had an organizational role for the training courses while the role of the interdisciplinary academic team from unibz (design and social sciences researchers) was to monitor and evaluate the women's satisfaction with the project and map and highlight their needs and wishes so that they could be considered in the planning of the training activities. The women who participated in the project are at risk of cultural marginalization as they are severely constrained in their social environment due to language barriers, lack of knowledge about the local context, and lack of a sense of belonging. The project aims to support women's empowerment in their social, economic, and professional achievements, attuning women to the territory and supporting them to become more independent. It aims to ensure social inclusion and to help women develop skills and knowledge in order for them to start a working life and provide them with individual and social means for their personal development and civic actions.

The women of the DIL project come from different cultural backgrounds, have different language skills, and some have a low literacy level. Using traditional verbal-based tools such as interviews, surveys, or questionnaires was therefore very challenging and did not lead to a deeper understanding of their needs and experiences. In order to make this process more inclusive and open to More-than-Verbal expressions, we iteratively prototyped several ad hoc tools that facilitated the assessment processes and helped us to gather valuable insights from the women.

This paper introduces three main tools and methods developed and adapted during the project. The first one is a "visual talking-cards" set, which is used in a playful and tangible way to facilitate a survey-like questionnaire with visual representations that enable communication between the researchers and the women. The second is a field note template that includes an empathy map for participant observation that helps observers assess and record women's lived experiences. The last one is an activity based on "body mapping" that helps with conducting focus group sessions through the use of the body as a medium to stimulate women to express themselves in a more embodied way.

Our paper addresses the development of More-than-Verbal Tools (MVT) and explains the challenges behind working with migrant women. By developing tangible and embodied tools, our aim was to support the involved women to express themselves in a more equal and inclusive way. We have used the "say, do, make" model (Sanders, 2002) to describe the tools as "boundary objects" (Star & Griesemer, 1989) used for engaging with women.

2. Coping with Crises

In the DIL project, there were many crises that encouraged the researchers to take action and develop strategies. In the paper, we define crises as "disruptions" that occur when we, as researchers, join situations which were contested, contingent, and contradictory and thus require us to sharpen our sensitivity to the contextual problematization of our own knowledge-construction and research practices (Akama, Stuedhal & van Zyl, 2015). The first one was the positioning of the researcher. In such projects, a "designer from outside" (Winschiers-Theophilus et al., 2012) enters into a community that has its own peculiarities and complexities. The first encounter with this external figure can therefore bring friction, rejection, or a shallow dialogue. We can define the first encounter in the community as the first crisis that needs to be faced to build consensus, trust, and an empathetic relationship. Building trust needs time and designers should "set aside enough time to understand the local culture and use this understanding when engaging with participants" (Hussain et al., 2014). Therefore, we started with participant observations, in which the researchers became part of the group of migrant women participating in some learning activities (e.g. a tailoring course). The observations were participatory, either by being part of the group, actively taking part in the activities, or observing the course from a distance. This transitional phase was necessary to nurture a situated mindset about the training course and its participants (Raman & French, 2018) and create a relational base for the researchers and women. In addition, shared leisure activities such as teatime or cooking together helped to strengthen this relationship and build intimacy.

Another crisis was overcoming the language barrier that emerged once we were able to develop a situated mindset toward the project and its participants who have diverse origins and language skills. Most migrant women were from Morocco, followed by Nigeria, and from Bangladesh, Pakistan, Paraguay, Tunisia, Egypt, Iraq, and the Ivory Coast. In some courses, teachers used visuals and gestures to explain certain terms, as some women had low literacy levels, which made communication in a written format difficult. Besides language, Byrne and Sahay (2007) highlight the importance of the "capacity and skills of the participants" when working with diverse communities. Therefore, not only language skills but also other types of skills, like technology usage, drawing skills, etc. should be considered. Moreover, when we entered into the context we acknowledged that it was important to take women's differences into account without falling into standardization when identifying their needs, as they come from different cultural backgrounds. Zinn and Della Rocca (2021) underline the need to be aware of the risk of 'cultural relativism'; for instance, the different ways of understanding things including women's rights can be influenced by cultural contexts. For this reason, we did not pre-define the tools to employ for our evaluation but ad-hoc tools emerged from our growing understanding and experience of the project context and participants. Additionally, tools remained open for interpretation by the researchers and the participants in the process of getting to know and interacting with each other over time. Hence, we acknowledged the importance of developing tools and ways of communicating that are emergent, situated, open-ended, and specific to participants. Considering all these challenges in the project, the researchers responded with care and sensitivity in collaboration with other stakeholders and developed tools and strategies iteratively. The crises became the outlet for new ideas to tackle these challenges and let researchers be creative and situated in finding solutions.

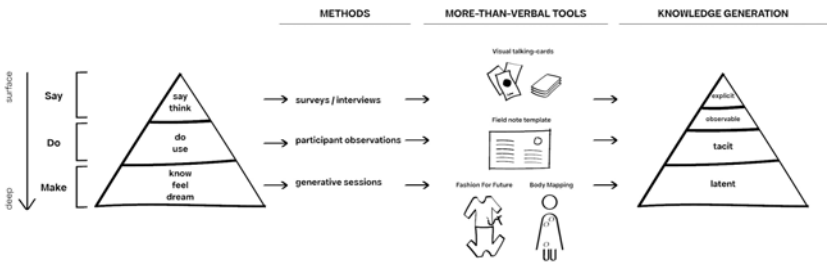
3. Designing the More-than-Verbal Tools

When working with marginalized communities, researchers often develop ad-hoc tools and methods in order to answer the specific needs of the community and engage with them in a proper way. While art-based approaches involve embodied experiences and narratives to enable participants to express themselves in alternative and creative ways (Sarantou et al., 2017), making and constructing things as a way to express themselves is also a common method (Tang et al., 2019). In co-design processes, generative tools are used to bring people together to express themselves visually and verbally (Sanders, 2000). Sanders (2002, p. 1) highlights that people "can be both articulate and creative when given appropriate tools with which to express themselves." These tools become mediators of dialogue, kind of a "boundary object" (Star & Griesemer, 1989), between groups of people who come from different social

worlds. Ehn (2008, p. 96) situates the concept of boundary object in design processes and defines it as "weakly structured as to achieve flexibility and allowing transference and commonality, but strong enough to be used in individual use or use in a uniform environment". Moreover, these objects can be considered as "contextual tools" (Aguirre et al., 2016) revealing different kinds of knowledge that are embodied, tacit, and experiential (Shubert et al., 2021).

The More-than-Verbal Tools aim at aiding verbal communication that is limited due to the diverse language skills, cultural backgrounds, and low literacy levels. By focusing on embodying the women's lived experiences and expressivity, the tools try to make the women's expressive capacities and thus their agency tangible and to validate them (Raman & French, 2022). We use the Say-Do-Make model (Sanders, 2002) in order to retrospectively reflect on the three generated More-than-Verbal approaches based on their function and ability to reveal knowledge that ranges from explicit to tacit to embodied (Figure 1). In our understanding, More-than-Verbal tools are not merely objects or artifacts, they emerge in the course of the project as a result of the developing situated mindset of the researchers and their relationship with the participants. They can thus take multiple forms, from tangible tools to situated collective rituals, interventions, and workshops. More-than-Verbal tools try to support meaningful engagement by attuning approaches and methods to the quality and dynamics of a particular collective of actors involved in a project (Raman & French, 2018).

Figure 1: Illustration showing More-than-Verbal tools adapted in Say-Do-Make diagram from Sanders (2002).



3.1 More-than-Saying

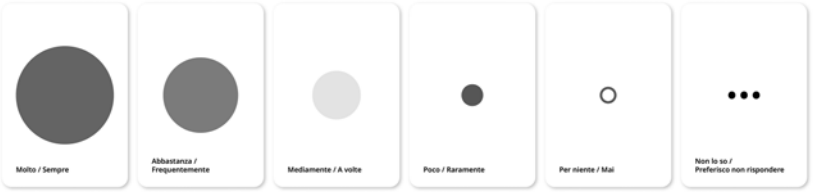
Traditional surveys and questionnaires are the common tools to assess participants' satisfaction. In our project, the complexity of the things to be assessed led to a com-

plex language and vocabulary which made the more standard questionnaire unable to give voice to the perspectives, positions, and needs of the women. Therefore, we had to develop mediating tools to facilitate communication with women and give voice to their experiences with an eye on attuning to the women's individual and collective assets (Raman & French 2022). Initially, we thought of combining the training courses with monitoring and evaluation activities in collaboration with the teachers. To give an example, the initial idea was to collaborate with the tailoring course to monitor participants' satisfaction with embroidery. However, this was time-consuming and not all women had the same embroidery skills. Therefore, we decided to measure participant satisfaction with visual representations that we designed to assist verbal communication to supplement the traditional survey and questionnaire. In our initial participatory observation, we realized that participants were mostly engaged with their smartphones, and therefore we decided to use visual emoji-like expressions as visual representations for facilitating the survey. In particular, using visual face emoji representations that were inclusive and non-monotypic to represent the diverse types of women allowed us to address all participants on the same level while tapping into and making tangible their existing expressive capacities. We decided to run play-like sessions in pairs as shown in Figure 2.

Figure 2: Participant satisfaction evaluation activity using visual talking-cards for the first time. Photo: Merve Bektaş, 2023.

The session enabled us to evaluate women's involvement and motivation as well as their perspective on different aspects of the training courses (e.g. teachers, contents, teaching approaches). Making these opinions tangible facilitated the project's actors to become more aware of the development of the project including its challenges. Although we used these cards to measure participant satisfaction, they could also become a tool for the course teachers to teach several topics like civic education. The use of colors and shapes help make the meanings represented on the cards more concrete. Once women become familiar with the cards, communication becomes more fluid and the interactive experience gives women more power in their expression.

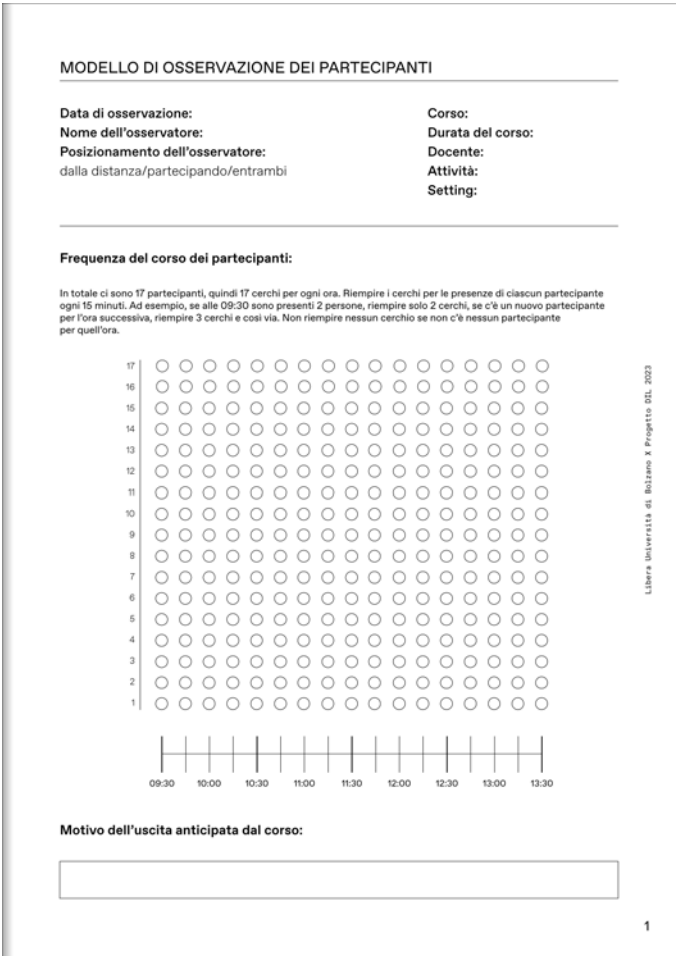
Figure 3: Some of the visual talking-cards. Design by: Merve Bektaş, 2023.



3.2 More-than-Doing

For the participatory observations, we designed a field note template to help the observer embed the lived experiences of the participants. The template includes monitoring and evaluation of frequency, motivation, social interaction, engagement, and satisfaction. Moreover, an empathy map canvas (Gray et al., 2010) helps the observer to move beyond solely describing the participants' actions towards "corresponding" with them to listen and respond to the unfolding of events in an open-ended and careful way (Gatt & Ingold, 2013). Empathy maps (developed by Dave Gray) are used to sensitize designers to users' needs, motivations, and emotions. Therefore, we included it in our templates enabling the researchers to foster empathy with the women and to reduce bias, and misunderstandings related to language and modes of communication. Here, the observers immerse themselves in the situation and translate the quantitative and qualitative data into insights. This template was a result of the time spent on previous participant observations that "contextualize(s) insight of local values and practices within wider local significations" (Howell, 2018, p. 2). Beyond data related to the frequency of the participants, the canvas enabled us to tangibly document aspects about the environment of the courses and more importantly the contextual social dynamics and interactions so that they could be considered in the ongoing shaping of the training program.

Figure 4: Participant Observation Template. Design: Merve Bektaş, 2023.



3.3 More-than-Making

Making was an important part of the project in which women used their practical skills not only to create textile artifacts but to manifest their existence and capabilities in society as migrant women. The first edition of Fashion For Future (Bolzano, 2023) hosted a public intervention carried out collaboratively by migrant women and design students, which was then brought into the public sphere to echo their voices. The workshop was developed starting with the crowd-sourcing of used t-shirts, followed by collaboratively cutting them into patterns and sewing them into a manifesto artifact for a public flash mob in Bolzano. The process of making was pre-

ceded by a critical reflection on the textiles industry being one of the most polluting realities infamous for its mass-production of cheap clothing and unethical labor practices. The hands-on process of making not only allowed the diverse participants to share their skills and make them visible, but it also generated an intimate and respectful space allowing personal discussion and cultural exchange. The workshop artifact resulted in an oversized t-shirt dressing and connected participants in their demonstration for better working conditions for the people who make our clothes—mostly women—in a public protest contributing to the "Good Clothes, Fair Pay" campaign during the worldwide Fashion Revolution Week. The workshop was not per se developed as an evaluative activity. However, when considered as a More-than-Verbal tool, it enabled us to reflect on the potentials of DIL as a social innovation project to create opportunities for the involvement of the participants in the social life of the city. This, as aforementioned, is by creating a concrete space for women to express themselves in More-than-Verbal ways, such as making, in a public context and interacting with other actors in the city.

Figure 5: Workshop at ZIPLAB with migrant women and design students. Photo: Aart van Bezooijen, 2023.

Figure 6: Fashion For Future public intervention in Bolzano. Photo: Alexandra Frühstorfer, 2023.

Besides the Fashion for Future workshop, a participatory mapping activity was conducted to reflect on the women's learned skills and future wishes and dreams. In design research, body maps are used as visual representations of the human body that are drawn on paper in order to express experiences that cannot be communicated verbally (Cochrane et al. 2022). They can also be used for reflecting on discourses that have an influence on bodies, "shaping perceptions, imaginaries, and meanings of social roles of sectors or communities" (Ares & Risler, 2016, p. 29). In our participatory mapping activity, we used body mapping to trace and reflect on the capabilities and the know-how that the women acquired or would like to have in the future. The activity involved drawing real-size body silhouettes for mapping certain aspects of a person and/or group in relation to both the internal (tacit experience and know-how) and external (desired experience and know-how) parts of the self. The women started drawing outlines of their bodies on papers hanging on the wall with the help of another participant. They were informed about the 5 different parts of the body and their associated meanings. The head is associated with theoretical and cognitive skills; the mouth with communicative, expressive, and linguistic skills; the heart and belly with emotional and caring skills, the hands with practical and manual skills; the feet with territorial and cultural skills and a sense of belonging. The activity started with a reflection on acquired skills and knowledge and concluded with future desires and visions. These visualizations enabled the researchers to understand the capabilities that women were able to acquire compared

to those foreseen by the training program. Concurrently, it helped to bring light to those competencies that, while not foreseen by the training program, were considered fundamental by the participants in order to achieve the overarching ambition of the program to support the women's empowerment in their social, economic, and professional life and their independence. Nevertheless, the visualized body maps became more than an instrument for monitoring and evaluating the training courses. It helped the women to recognize their competencies individually and collectively and see themselves as competent individuals. It was an alternative way for communication and reflection in which the body became an essential medium to embrace and reveal the women's voices. Moreover, as the activity was a collaborative making process, it facilitated interaction between women, teachers, and researchers.

Figure 7: Body mapping activity showing the collaboration. Photo: Merve Bektaş, 2023.

Figure 8: Body mapping activity. Photo: Merve Bektaş, 2023.

Conclusion

This paper presents a case study of designing More-than-Verbal tools as an approach to deal with the challenge of involving the voices of migrant women in situations of fragility in the ongoing evaluations and shaping of a social innovation project in Bolzano (Italy). It addresses the potential of More-than-Verbal tools to use crises as triggers for the researchers to attune to the participants' contextual capacities and needs for expression rather than downplaying them. In this way, it has shown that participants' empowerment and crises are closely intertwined and not mutually exclusive and linked to situatedness, where pains and gains are embraced together. In the DIL project, we interpreted crises as "disruptions" of the researchers' perspectives and practices when entering into situations which are contested, contingent, and contradictory (Akama, Stuedhal & van Zyl, 2015). These situations need to be confronted by constantly and carefully attuning pre-existing perspectives and practices, including the methods and tools, to the emerging expressive needs and capacities of the participants which often evade what can be known in advance of the process of developing trust and mutual learning. To enable expression, these More-than-Verbal tools move beyond predefined methods and towards their iterative development, based on unveiling and interacting with the crises emerging from situated encounters between researchers and participants. Additionally, by being open-ended they enable re-interpretation by researchers and

participants together and over time. Furthermore, the focus on More-than-Verbal expressions and on making them tangible helps move beyond verbal language as main avenues for voicing needs, opinions, and desires. As such, the tools have proven to be a valid approach for empowering groups who experience marginalization due to different language backgrounds and capacities. In particular, the "visual talking-cards" set helped the researcher to convey to the involved women complex concepts (motivation, engagement, social interaction between participants and teachers, satisfaction with spaces, tools and services offered, etc.) while facilitating them to express their opinions concerning such concepts. The participatory observation canvas managed to document intangible aspects of the training course, such as environmental aspects and contextual social dynamics and interactions which brought further understanding to the women's lived experiences. Finally, the body mapping activity helped to concretely visualize the capacities that women felt to embody at the end of the course and those that they considered fundamental—even if not achieved in the training—in order to improve their social condition and to achieve empowerment. Thus, the More-than-Verbal tools supported the creation of a space for the women to give their own feedback to shape the project and made it possible for them not only to communicate their needs but also reflect upon them in a collective manner. In doing so, the tools also helped to balance inequalities and power dynamics between all actors involved in the project, in our case women, teachers, researchers, and tutors in relation to the assessment of the project's effectiveness and potential for social innovation. As such, the paper can be seen as a contribution to the need for supporting "genuine participation" of marginalized groups in social innovation projects. Finally, the More-than-Verbal tools presented in this paper can also become open-source and be shared with similar initiatives to be used in future projects. Nevertheless, additional exploration of such tools in different contexts and groups of people would be required in order to assess their potential for replicability and adaptability.

Statement on compliance with ethical standards

The participant women, who were kept anonymous in the surveys, had signed a consent declaration according to General Data Protection Regulation (GDPR) standards on privacy and data treatment in the ESF service agreement at the very beginning of the project, after the selection process.

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Better Together: Responding to Crisis through Transdisciplinary Approaches and New Tools

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Abstract *Challenges posed by the climate crisis are highly complex and are overwhelming for people to face and to tackle. To address these challenges, it is necessary to consider and integrate together different perspectives and expertise from various stakeholder groups, including those of scientists and civil society. However, including citizens in city planning for climate resilience is demanding, especially in times of scientific scepticism and disbelief towards climate change, and therefore their inclusion requires new approaches. Transdisciplinary research can address these challenges by including scientists and citizens from an early research stage leading to a high interest in, and a need for a co-design approach as well as co-creative and transdisciplinary ways of working and researching. For transdisciplinary research to unfold its full potential in addressing complex, real world problems holistically, it has been effective in the recent past to implement co-designers in new approaches such as living labs or real-world labs (German: Reallabor) in order to meaningfully include all these different perspectives as well as providing a purposeful approach for transdisciplinary work across different disciplines.*
Cologne University of Applied Sciences aims to enable co-creative research in real-world labs and is therefore piloting the project Co-Site which focuses on the topic of green, blue and critical infrastructures in the region with the aim of strengthening climate resilience and management in crisis situations. Within the Co-Site project, three laboratories or tools for the co-design work are planned to be set up: (1) an Extended Reality (XR) laboratory; (2) a mobile laboratory; and (3) a co-creative workspace as a laboratory for collaborative work with citizens and other stakeholders, which are thus the focus of the here presented study. In order to follow a participatory approach and to co-creatively set up these three laboratories, the authors conducted an online study within the project focusing on the research question "how do experts from different disciplines envision their transdisciplinary work with stakeholders in the laboratories as part of a real-world lab focusing on climate change adaption strategies and climate crisis, and which methods and tools could enable their co-creative work within?

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In the study, 11 members of the newly started real-world lab project answered various questions regarding their idea of working transdisciplinary with stakeholders and citizens in the three laboratories in the coming years. Results showed that participants plan to use the co-creative space more as a collaborative space and use the mobile laboratory more to interact with communities and stakeholders. In contrast, the focus of the XR-laboratory is on the visualisation of climate change and urban planning.

Author keywords *co-design; climate change; real-world labs; transdisciplinary methods*

1. Introduction

In the current state of climate change and climate crisis, new tools and approaches are needed to find solutions to complex problems, one of them being behaviour change of individuals within the wider society (Owen, 2020). Behaviour change is often associated with effort, such as economical effort (Fankhauser, 2017). Therefore, constructive solutions with a visible benefit for affected stakeholders and communities, and consequently a higher chance of successful execution are needed (Williams, 2020). This poses the question of how such solutions can come into existence and can be implemented.

The real-world lab is one approach addressing such complex societal challenges by allowing various stakeholders from science, the public sector and civil society as well as citizens to be part of the process and solutions that are generated in a co-creative way, thus allowing for wider acceptance of the solutions created (De Flander, Hahne, Kegler, D. J. Lang et al., 2014; Parodi et al., 2016; Bergmann et al., 2021). Co-designers and co-design methods are often used in these settings to work with those varying stakeholders in order to integrate them into the project (Defila & DiGiulio, 2018). Thereby, co-design can be understood as an umbrella term for different collaborative design methodologies, e.g., social design, participatory design, and community design (Murdock, Osgood & McCarvill, 2023).

The transdisciplinary *Co-Site* project that started in January 2023 and is led by the University of Applied Sciences Cologne follows a real-world lab approach, while exploring different tools—namely three participatory laboratories—which are supposed to support the co-design and the co-creative aspect of the project. The aim of the project is to apply co-creation in sites near the city of Cologne, in order to address climate risks such as flooding and heat and to develop climate adaption strategies while developing systemic and innovative transfer. The regional partners and their respective regions were amongst others heavily impacted by flooding in July 2021 (Federal Ministry of the Interior and Community of Germany and Federal Ministry of Finance of Germany, 2021). Therefore, the focus of the project is not only the scientific expertise, but more so the transdisciplinary cooperation between science, the

public sector and local practitioners, such as the communities, and the integration of different forms of knowledge through participatory work and new ways of learning together (De Flander, Hahne, Kegler, D. Lang et al., 2014).

In this paper, the authors explore through a study with members of the research project how new tools in the form of three laboratories could be useful in order to work collaboratively and transdisciplinary with stakeholders and communities on the topic of crises and climate adaption strategies. This question arose as part of a co-creative process, led by the co-design team, to design and set up these laboratories as an infrastructure for the project: (1) a co-creative space for collaborative work located in Cologne, especially to integrate the transdisciplinary project into student programs, such as game-based learning (Varney, Mai & Varney, 2023); (2) a mobile laboratory in the form of a van in order to reach citizens, communities and stakeholders in the cities and regions that are project partners; and (3) an Extended Reality (XR) laboratory with Virtual Reality (VR) and Augmented Reality (AR) equipment, which will be integrated into the co-creative space as well as into the mobile laboratory.

The aim of the study is to integrate the needs of the project-internal researchers from different disciplines; for instance green- and blue infrastructures (GBI) such as urban parks or urban waterways (Venkataramanan et al., 2019); critical infrastructure (CRITIS), meaning organisations and facilities which would result in lasting supply bottlenecks in case of a failure (Federal Ministry of the Interior of Germany, 2006); VR/AR programming; co-design; and science communication. The co-design team conducted the here presented study to better understand the researchers' needs and various ways of envisioning working in the aforementioned laboratories, to come up with a concept for the shared project infrastructure for the co-design work within them. It lays open the differences between disciplines and different ontologies and the challenges they pose to transdisciplinary ways of working in collaboration and setting up the "right" spaces for these ways of working. In this paper, the conducted study is presented. The theoretical context of real-world labs, participation and co-design are particularly illustrated, since participants (project members) plan to use the laboratories as tools for such research. The procedure and analysis of the study is depicted in detail due to the qualitative character of the conducted study. Within the discussion, the results are contextualised and analysed in relation to everyday co-design practices.

2. Real-world Labs, Participation and Co-Design

The idea of a real-world lab (German: *Reallabor*; Parodi, Steglich & Bylund, 2023) is to develop and create sustainable transformation for, with and in society which requires transdisciplinary research and participation, meaning research with dif-

ferent disciplines and practice partners, such as communities and other stakeholders (Bergold & Thomas, 2010; Defila & DiGiulio, 2018). According to De Flander et al. (2014), the value of the real-world lab work is in the generation of context-specific, socially robust knowledge, which promotes social innovation locally (De Flander, Hahne, Kegler, D. Lang et al., 2014). Furthermore, real-world labs include the users and their needs in the process, allow their participation, and create with it opportunities for solutions that are alternatives to the common problem-view within the context of technical and organisational feasibility, a view which is prevalent in Living Labs (Parodi, Steglich & Bylund, 2023). Living Labs focus on user-centric innovation and co-creation of products, services and technologies in real-life temporary test settings in an open and distributed innovation process (Bergvall-Kåreborn et al., 2009; Liedtke et al., 2015; Hossain, Leminen & Westerlund, 2019). In contrast, real-world labs are designed to conduct transdisciplinary research with a long-term orientation and experiments in real-world settings to address societal challenges and contribute to transformations (Bergold & Thomas, 2010; Schäpke et al., 2018; Bergmann et al., 2021). Their wider scope includes societal, economic and environmental dimensions and is often focused on specific geographical areas to address systemic challenges within those areas.

Participation in the context of real-world labs involves practice partners and stakeholders who are affected by the results of the work in real-world labs (Defila & DiGiulio, 2018). Stakeholders are hereby understood as people "who choose to involve themselves in a particular issue" (Creighton, 2005, p. 23) similar to practice partners (Defila & DiGiulio, 2018) or community engagement (Natarajarathinam, Qiu, & Lu, 2021). In this context, the focus is on participatory transdisciplinarity, such as the full inclusion of the practice partners into the knowledge production process and therefore the equal validation and acceptance of the knowledge of everyone involved (Mobjörk, 2010). Such involvement of a variety of stakeholders requires different disciplines, including domain expertise (in GBI and CRITIS) and facilitation skills (e.g., social sciences or design; Sanders & Stappers, 2008; Evans & Terrey, 2016) because researching in real-world labs involves the deliberate use of participation to achieve a tangible impact (Seebacher, Alcántara & Quint, 2018).

Co-design plays a central role within participation and research in real-world labs (Defila & DiGiulio, 2018), because it is a practice where people come together to connect their skills, knowledge and expertise to create solutions for complex problems with designers having the facilitator role in this process (Lotz-Sisitka et al., 2016; Tromp & Hekkert, 2019; Chapa, Perez Rubi & Hack, 2023). co-design can create a shared understanding and common ground within a project and therefore enables and enhances the transdisciplinary collaboration (Bergmann et al., 2021). Dependent on the origin and scientific area, co-design entails different design and working strategies, such as collaboration, co-operation or connection of practices and resources (Zamenopoulos & Alexiou, 2012), one approach being social design

(Murdock, Osgood & McCarvill, 2023). co-design in real-world labs and social design share commonalities; both are inter- and transdisciplinary, user-centric approaches, using interventions and experimentation, and they both heavily rely on involving communities in order to address complex societal challenges (Defila & DiGiulio, 2018; Tromp & Hekkert, 2019). The idea behind co-design is the deliberate utilization and integration of a variety of stakeholders from different perspectives to bring about positive change (Vargas et al., 2022) and therefore it is essential for participatory transdiciplinarity in real-world labs (Seebacher, Alcántara & Quint, 2018). Within these approaches, participatory processes are used to empower people to redesign better alternatives for their communities (Zamenopoulos & Alexiou, 2012; Tromp & Hekkert, 2019).

Empirical research shows that co-design methods are useful in promoting interactions between relevant stakeholders (White & van Koten, 2016) and significantly increasing idea generation in innovation processes (Mitchell et al., 2016). Hence, co-design can increase the quality of knowledge generation in real-world labs by, for instance, figuring out relevant research topics (Rhodius et al., 2016). However, a central part of co-design is the deliberate choice of the tools and methods depending on the context, stakeholders and the planned outcome (Zamenopoulos & Alexiou, 2012). Hence, co-design approaches vary strongly dependending on the context and stakeholder integration, and range from individual interviews, focus groups, design thinking or prototyping, even to the integration of new methods such as VR or makeathons (Evans & Terrey, 2016; Dübner, Fanderl & Heydkamp, 2018; Reed et al., 2019). Therefore, the question arises as to how different experts in transdisciplinary research can work and research with different stakeholders, practice partners and communities and which methods can enhance participatory transdisciplinarity and co-design research in the context of a real-world lab project regarding climate change and climate crisis.

3. Methods

Online Study

To co-develop the three different laboratories (XR-laboratory, mobile laboratory and co-creative space) used as infrastructure and tools for co-design and participation within the transdisciplinary *Co-Site* project, the authors conducted an online study via SoSci Survey (Leiner, 2019) with qualitative and quantitative questions regarding these laboratories. An online study was chosen because it allowed a time-efficient and individual schedule for participation due to a tight timeline for planning and realising the laboratories. A method that limits the external influence on the participants coming from other participants (e.g., focus groups) or the authors (e.g.,

via interviews) was chosen since all participants and authors work together on a daily basis, and possible group dynamics could have influenced the answers (Mayerhofer, 2007). By conducting an anonymous online study, the plan was to decrease the chance of influence on data. To deal with the challenge of the participants' not being able to ask questions in online studies, participants were encouraged to reach out to the authors for any questions.

To deliberately include the researchers' needs and co-design the laboratories, the study was conducted in an early stage of the project. Hence, not all participants might have already worked in a participatory manner. The research question addressed with this study is the following: how do experts from different disciplines envision their transdisciplinary work with stakeholders in the laboratories as part of a real-world lab focusing on climate change adaption strategies and climate crisis, and which methods and tools could enable their co-creative work within? The evaluation of the laboratories will be continued throughout the project.

Eleven Experts from different fields (two co-designers, one science communicator, three GBI engineers, one CRITIS engineer, two AR/VR programmers, and one project manager) participating in the transdisciplinary research project *Co-Site* answered questions to explicate their needs in the period between March 30 and May 10, 2023. For each laboratory, eleven participants of the study (six women, four men, one person did not specify their gender; age: $M = 36.4$ years, $SD = 10.06$) were introduced to the general concept of the laboratory via a small explanatory text. Afterwards, participants could submit their planned way of working participatorily in one of the laboratories and answered questions regarding the working situation, such as "what does the work situation look like?" or "what methodological approaches could you implement in the creative and experimental spaces?" Furthermore, a question was posed regarding how the laboratory should be designed and whether specific tools are needed for the experts to work in a participatory manner sufficiently. Finally, participants were asked to name further relevant people needed to be involved in the design process, and how often they plan to use the different laboratories (Scale from 0 = very rarely – 100 = as often as possible). Access to the questions is possible through the Open Science Framework storage (Bickert-Appleby et al., 2023).

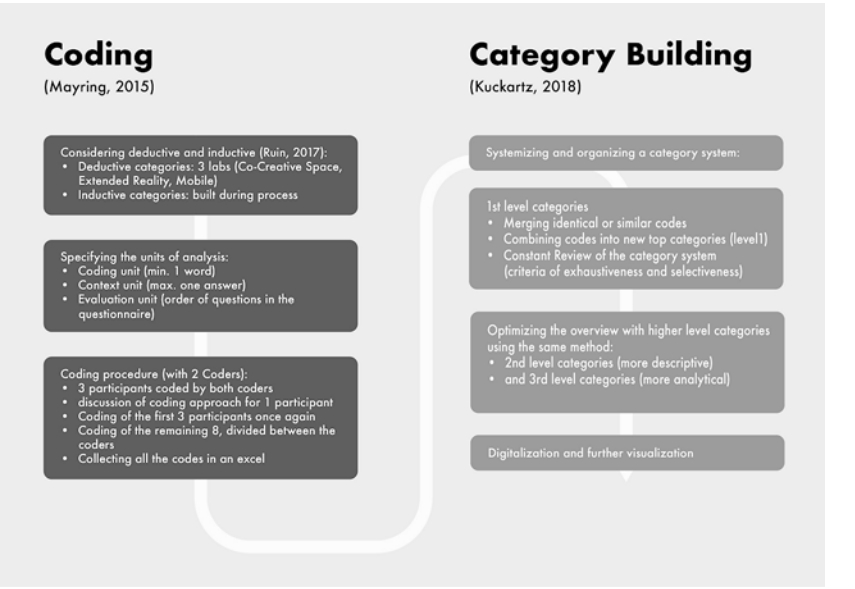
Analysis of Qualitative Data

For the qualitative data analysis, the approaches of the qualitative content analysis by Mayring (2015) and Kuckartz (2018) were combined. For the analysis of the three laboratories, the first step consisted of coding the qualitative data. Coding describes the scientific method of systematically handling the material based on a category system by summarising qualitative answers into a few terms (Kuckartz, 2018). Further steps were to bind the codes into broader categories. With respect to Mayring (2015) and Ruin (2017), the three laboratories formed pre-determined deductive cat-

egories. The inductive categories were built during the process of coding and categorising. The coding procedure was carried out by two coders and is presented in detail in Figure 1. They coded three participants individually and discussed their approaches regarding one participant to understand each other's way of thinking. Based on their discussion, the answers from the first three participants were coded again and the remaining eight participants were divided between the two coders for final coding (cf. blue boxes in Figure 1).

Afterwards, the coders categorised the codes as a team to include as many perspectives and possibilities of interpretation as possible (Kuckartz, 2018). To form the first category level (L1-category), identical or similar codes were merged and combined into categories for each laboratory and each question. During this procedure the category system was constantly reviewed considering that the categories needed to make sense and to be exhaustive and selective. Following Kuckartz (2018) similar L1-categories were bound into second level categories (L2-categories, more descriptive) and third level categories (L3-categories, more analytical) for optimising the overview (c.f. orange boxes in Figure 1). This process resulted in four L3-categories for the co-creative space, five for the XR-laboratory and three for the mobile laboratory.

Figure 1: Diagram of coding process.



4. Results

For each laboratory, L3-categories of the laboratories are the final results of this qualitative analysis. Due to exploratory qualitative research being characterised by its process-oriented manner, for each laboratory one example intends to make the process of the qualitative analysis clearer to the reader.

Regarding the co-creative space, L3-categories are *Transdisciplinary Working*, *Knowledge Management, Creative Equipment* and *Space*, as can be seen in Figure 2. The grey boxes show the L3-categories, each consisting of two to three L2-categories (orange boxes in Figure 2). As an example, the coding strategy for L3-category *Transdisciplinary Working* was the following: The coders decided for this L3-category because the L2-categories (*Collaboration, Methods* and *Stakeholders*) indicate a general coming to terms with the main idea of the project, which is to find out ways to transmit knowledge in a transdisciplinary network including many stakeholders. L1-categories for *Collaboration* bundled up from *Collaboration, Participation* and *Joint Activities*. The main aspect under which these three terms were grouped together by the coders was the idea of sharing either ideas, workload, or information in some sort of synergetic way.

Figure 2: Level two (orange) and level three (grey) categories of Co-creative Space.

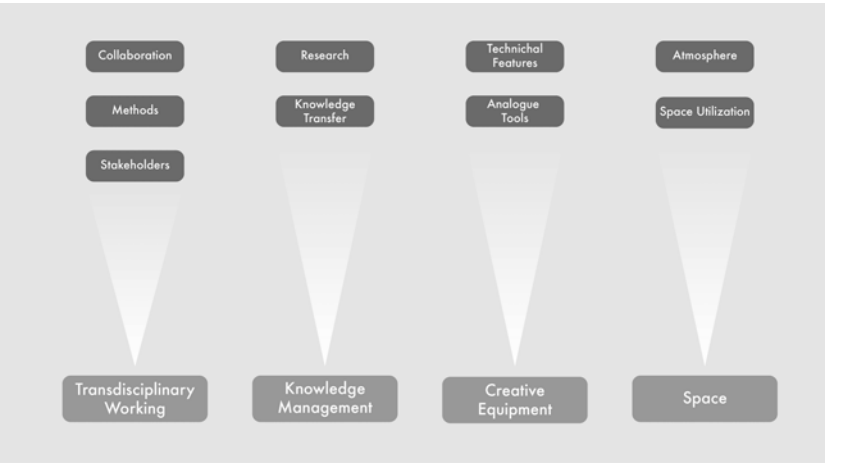


Figure 3: Level two (orange) and level three (grey) categories of XR-laboratory.

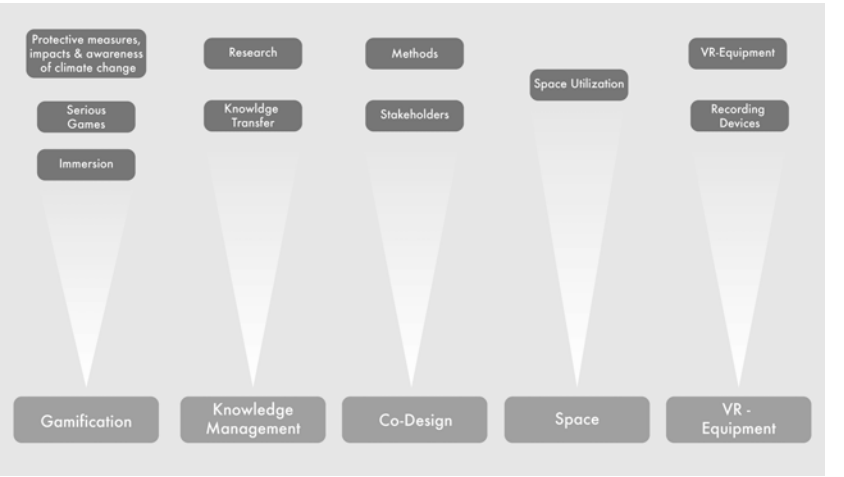
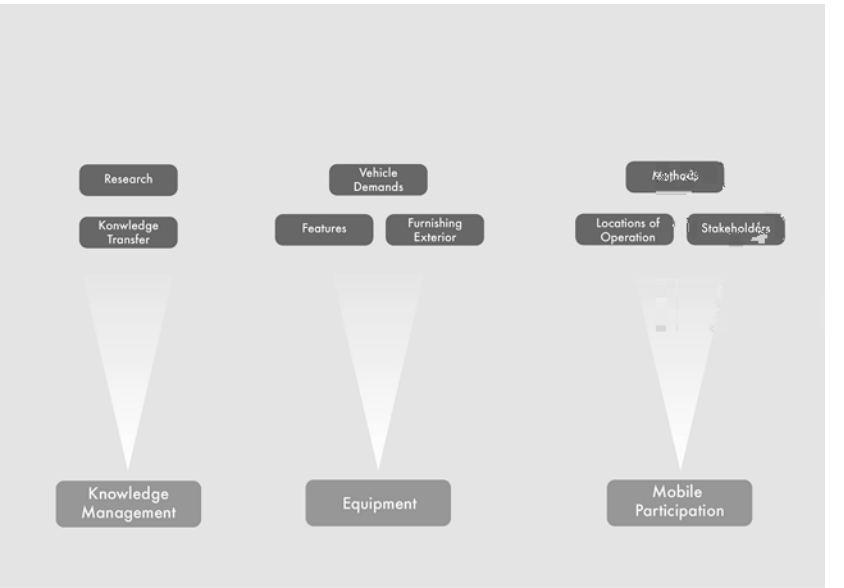


Figure 4: Level two (orange) and level three (grey) categories of Mobile Laboratory.



Considering the XR-laboratory, the L3-categories are *Gamification, Knowledge Management, Co-Design, Space* and *VR-Equipment* (cf. grey boxes in Figure 3) consisting of one to three L2-categories (cf. orange boxes in Figure 3). As an example, L3-category *Gamification* consists of the L2-categories *Protective measures, impacts & awareness of climate change*, *Immersion* and *Serious Games*. The coders recognised as the main idea of the L2-categories the aspect of immersing oneself into climate scenarios, whether they are related to sensitization or knowledge transfer. Gamification refers to the feature of enhancing motivation of learning and engagement through game-like elements mostly used in XR environments (Strahringer & Leyh, 2017). The L2-category *Protective Measures, Impacts & Awareness of Climate Change* is made up of the L1-categories *Impact of Climate Change, Protective Measures, Climate Change Awareness, Identification Conflict Areas* and *Depicting Climate Change in VR*. Main pillar of this category is the idea to educate, build resilience and take action to stop climate change.

Concerning the mobile laboratory, the L3-categories are *Knowledge Management, Equipment* and *Mobile Participation* (cf. grey boxes in Figure 4). Each L3-category has two or three L2-categories (cf. orange boxes in Figure 4). To pick an example, L3-category *Mobile Participation* was chosen as a category by the coders due to all L2-categories (*Methods, Locations of Operation* and *Stakeholders*) being centred around the process of creating a knowledge transfer that is not bound in time and space and can thus reach more people regarding diversity and quantity. L2-category *Methods* in turn is made up of many L1-categories including *Interviews* and *Participative Methods*. Here, a commonality can be seen in the fact that their overarching goal is eliciting discussions and reflections in people while collaborating on these methods. Access to all categories, their deriving and their frequencies is possible through the Open Science Framework storage (Bickert-Appleby et al., 2023).

5. Discussion

The aim of this study was to investigate how experts from different disciplines envision their transdisciplinary work with stakeholders in the laboratories as part of a real-world lab focusing on climate change adaption strategies and climate crisis, and which methods and tools could enable and enhance their co-creative work within. Therefore, an online study was conducted in which members of the transdisciplinary project *Co-Site* answered questions regarding their planned participatory work with stakeholders, practice partners and communities in the three planned laboratories (co-creative space, XR-laboratory, mobile laboratory), which led to three to five main categories for the laboratories in the analysis. In what follows, the results will be discussed and analysed regarding their relevance for the three laboratories as tools and infrastructure for everyday practice in co-design.

Co-creative Space

Within the co-creative space category, the highest frequency was the L3-category *Transdisciplinary Working* (n = 72). This indicates that the focus of the co-creative space is neither the space itself nor the needed equipment, but the work done together in transdisciplinary teams in this space, especially since all L2-categories from *Transdisciplinary Working* (*Collaboration* (n = 31), *Methods* (n = 20), *Stakeholder* (n = 21)) are part of the 5 most mentioned L2-categories. Participants plan to utilise already known methods (n = 7) as a starting point for their research, but also creativity (n = 4) and new methods (n = 4) to enhance their expertise and knowledge and to increase the quality of research in real-world labs. Especially, interviews (n = 5) were mentioned as a research method example presenting one reason why we need not only domain experts but also co-design experts in the real-world lab, (n = 2) who know how to conduct interviews and facilitate other interactive research methods engaging people, such as stakeholders and communities (Sanders & Stappers, 2008; Evans & Terrey, 2016).

Regarding the construction and conceptualization of the co-creative space, one can see the perceived importance of working in collaborative transdisciplinary teams in the context of real-world labs, confirming De Flander et al. (2014): the heart of the real-world lab work is transdisciplinary collaboration, meaning working for, with and in society (Bergold & Thomas, 2010), such as in communities. This also highlights the fact that there is a need to learn more about other co-creative, co-design and participatory methods from other disciplines, a central aspect for transdisciplinary work, to unleash its full power (Nicolescu, 2010). Consequently, transformation benefiting stakeholders, practice partners and communities can occur, since not the space itself makes the co-creative space but the transdisciplinary work and the opportunity for interaction within (Goermar et al., 2021).

Beside the importance of collaborative research and work, participants frequently mentioned aspects regarding *Space Utilization* (n = 32) and *Technical Features* (n = 21), which include aspects of the room design and the relevant equipment. Further scrutiny reveals a focus on the needed modularity (n = 14) of the equipment and the room design especially regarding the need for collaborative (n = 3) and individual work (n = 4). This indicates the needed flexibility within the co-creative space and the collaborative work within. Similar to many already existing co-working spaces used for co-creation (Goermar et al., 2021) the co-creative space as a tool and part of the infrastructure for successful everyday co-design and co-creation needs to reflect the variety and modularity of co-creative, co-design and participatory methods as everyday practices. Especially, the variable group size needs to be accounted for, since, depending on the context, stakeholders and the outcome, the number of participants in co-design methods can vary immensely from one-on-one interviews to groups around 5 to 8 people in focus groups (Bohnsack & Przyborski,

2007) and up to 20 people or more in lectures or presentations (Bergmann et al., 2021).

Extended Reality Laboratory

Regarding the XR-laboratory, participants mentioned the L3-category *Gamification* (n = 72) including the L2-categories *Protective Measures, Impacts & Awareness of Climate Change* (n = 45), *Serious Games* (n = 9) and *Immersion* (n = 18) most often. Hereby, participants focused on the aspect of experiencing climate change (n = 45), including presenting climate change impact (n = 20), awareness of climate change (n = 13), and protective measures in disaster scenarios such as flooding (n = 12). Participants planned to use the XR-laboratory mainly as an information and communication platform which is an advantage of XR, since people can experience possible future scenarios of GBI (Helbig et al., 2023) or first-hand disaster scenarios without being in danger (Mol, Botzen, & Blasch, 2022).

Due to climate change, extreme weather situations happen more frequently and will continue to happen even more often (Intergovernmental Panel on Climate Change, 2023). Thus, experiencing the impacts of climate change without being in danger promotes awareness and willingness to prepare (Mol, Botzen, & Blasch, 2022), increasing the chance for communities to be prepared for the next extreme weather situation, like the flood in Germany in 2021 (Federal Ministry of the Interior and Community of Germany and Federal Ministry of Finance of Germany, 2021). Additionally, XR cannot only visualise scenarios but, especially with co-design practices, new scenarios can be created (Postert, Wolf & Schiewe, 2022). XR might stimulate some people to present and co-create new solutions regarding climate change adaptation (Bailenson, 2018).

This aspect goes hand in hand with the second frequently mentioned L3-category: *co-design* (n = 39) with the L2-categories *Methods* (n = 14) and *Stakeholders* (n = 25). Especially, aspects like participation (n = 4) and interaction in VR (n = 3) were mentioned as possible methods in the XR-laboratory. This indicates that participants see the potential of XR as one tool for participatory work and are here in line with co-design and participatory research (van Leeuwen et al., 2018; Reed et al., 2019; Postert, Wolf & Schiewe, 2022). However, since participants focused mainly on information and communication, education regarding the possible versatile usability of the XR-laboratory might enhance the quality of successful usage of XR in co-design. Hence, a wider understanding and knowledge of possible co-design methods opens a more specific selection and combination of such methods in the individual context (Beecroft et al., 2018; Bergmann et al., 2021) increasing the chance of successful co-design practices leading to a higher chance of results benefitting to communities.

Mobile Laboratory

In terms of the mobile laboratory, participants mentioned most often the L3-category *Equipment* (n = 89) including *Vehicle Demands* (n = 38), *Features* (n = 37) and *Furnishing Exterior* (n = 14) which are essential aspects for the construction of the mobile laboratory and therefore central to the researchers who plan to work in a participatory way with the stakeholders. However, the second frequently mentioned L3-category was *Mobile Participation* (n = 69) involving *Methods* (n = 47), *Locations of Operation* (n = 11) and *Stakeholders* (n = 11). Here, various methods regarding stakeholder involvement (n = 5) are planned, such as qualitative (n = 3) and quantitative methods (n = 5), participative (n = 8) and human-centred methods (n = 4). What all these methods have in common is the need for facilitation skills and expertise (Sanders & Stappers, 2008).

Here, participants plan to use different co-design methods in comparison to the focus of collaboration in the co-creative space. Even though the kind of methods are not specifically mentioned as this strongly depends on the context of the individual situation, one can still conclude that the planned utilization of the two laboratories has a different focus compared to everyday co-design practices. The direct participatory stakeholder, community and citizen involvement is mainly planned in the mobile laboratory and the collaborative work in the transdisciplinary team is more focused on the co-creative space. This is understandable since the co-creative space will be located in Cologne and the main research locations and areas are located around the city. However, this suggests that the participants in the study were able to envision participatory work with communities better outside "in the field" than in the co-creative space, in line with social design focussing on fieldwork and interventions in, with and for communities (Bergold & Thomas, 2010; Chen et al., 2016).

Despite the difference in their intentions concerning the use of the laboratories, participants see a similar importance for all the three laboratories for everyday co-design practices. When asked about their planned frequency of using the laboratories, participants plan to use them equally often (co-creative space: $M = 67$, $SD = 29.63$; XR-laboratory: $M = 63$, $SD = 31.22$; mobile laboratory: $M = 68$, $SD = 31.76$). This might be an indication that all three laboratories together may provide a multimethod approach for participative ways of working with different people, ontologies, and disciplines; and thus together they might enhance the quality of transdisciplinary, transformative and participatory work on climate change adaption in the region. Future research will focus on the implementation of the laboratories and the first experiences with the co-creative work and everyday co-design practices within.

Lessons learned and future research

Thanks to the possibilities it provides concerning individual and time-efficient participation, an online study was conducted. Furthermore, participants were able to answer with their individual opinion without being affected by any external influences, such as comments from other participants in focus groups (Mayerhofer, 2007). As mentioned earlier, to encounter the missing possibility to ask questions within an online study, the participants were encouraged to reach out to the authors for any questions regarding the online study. However, through the course of the study, it became apparent that certain technical terms like "co-creative space", "serious games" and "co-design" were understood differently by different people. The opportunity to ask questions and a broad explanation of the terms within the online study were not sufficient to meet this challenge. The answers partly showed that the variation in understanding might have frustrated participants of the study. The authors learned that the format of an online study at this early stage also needed a more practical approach, e.g. an interactive workshop format as part of a longer design process (Meinel, Leifer & Plattner, 2011).

As a result, the authors conducted a co-creative prototyping workshop with the same participants three months later, focusing on the same topic. Here, participants were able to practically experience the idea and concept of the co-creative space by, for example, prototyping a possible working day in the space and the individually appropriate design of the co-creative space. This change of format provided the authors with more in-depth insights and a higher level of respondence of the participants. The results from this workshop form the basis for further research processes and everyday co-design practices.

Team communication and shared understanding of technical terms are equally important for cognitive synchronisation between team members as is the shared knowledge of the design situation and a shared awareness of contextual design procedures, which are all key in co-design processes (Gero & Milovanovic, 2019). The study showcased challenges in working with different ontologies from different disciplines, and to create a common understanding of different technical terms as a prerequisite for co-creative work, which poses a challenge to a complex, multi-stakeholder multi-expert-domain project. However, not creating a common understanding of these terms creates ground for frustration and misunderstanding. It hinders people from fully engaging in the co-creation and co-design process and creates barriers. Hence, extra effort must therefore be contributed to defining the technical terms in order to achieve a common and practical understanding to be able to conduct everyday co-design practices, since co-design and action research are central aspects of research in real-world labs (Alexandrakis et al., 2021). Additionally, the authors have experienced that the challenges mentioned in this work call for an active design and management of co-creation and co-design processes,

especially in transdisciplinary projects and therefore require training and further research into co-design practices and competences.

Conclusion

In conclusion, the study has revealed that the three laboratories (co-creative space, XR-laboratory and mobile laboratory) can be seen as powerful tools for transdisciplinary co-creative and co-design work as everyday practice within real-world lab projects to work with stakeholders and communities in crisis situations. Specifically, it became clear that there is a common understanding of the mobile laboratory being an important tool for participatory work that all disciplines seemed to engage with and envisioned for their work, whereas the co-creative space and the concept of workshops for engagement and co-creation were less direct associations for all disciplines. Further, the study has revealed the XR-laboratory as a new tool across the disciplines for engaging with stakeholders, communities and citizens, while the aspect of co-creation scenarios and solutions using XR has not been recognized yet by the participants, but will be explored in further research.

However, the tools and spaces are not as relevant if the various stakeholders, such as researchers, practice partners, and communities, cannot find common ground and common language concerning main technical terms and approaches. Therefore, the authors see common understanding and action as a priority before tools, methods or spaces for collaborative work. Common ground can also be found in a shared goal such as delivering value for people, even if co-design brings a variety of people together that speak different languages, have different lenses and are employing different modes of thinking and doing (Tromp & Hekkert, 2019). Hence, the authors conclude that after having created a shared understanding of technical terms, successful transdisciplinary work needs not "the right" but a variety of spaces for collaboration as it offers multiple ways for different disciplines to engage in this practice.

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Statement of compliance with ethical standards

The study was conducted guaranteeing respect for the participating volunteers and human dignity. Specifically, participants gave informed consent prior to the study and were properly debriefed after completion of the study.

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Designing Together in Multi-Crisis Times: Effects of Mundane and Strategic Work with Indigenous Communities in the Ecuadorian Amazon

Nathaly Pinto, Efrén Nango

Abstract *This article explores the effects of committing to collectivity when considering the role of mundane and strategic work in cultivating a powerful action space for design research, particularly design for social change, with indigenous communities in the Ecuadorian Amazon. We reflect on the process and advanced results of an ongoing design intervention that aims to collaboratively design a system of pictograms for popular education processes, supporting the strengthening of identity and the creation of politicized spaces for education and action with and for the youth of indigenous nationalities, their communities and organizations, part of a regional indigenous movement. The project began by joining efforts with young student representatives from different Amazonian nationalities who were motivated by their need to make visible and denounce how the COVID-19 pandemic harshly deepened historical structural restrictions on access to higher education for indigenous peoples. The impact of COVID-19 on indigenous nationalities in the Amazon helps us address the way in which historical intertwined inequalities reflect in socio-environmental multi-crises in the region.*

The focus of this article is the histories of collective effort that underpin the design intervention. Through this focus, we argue that spaces for mundane and strategic work, explored before with citizen-designer or user-designer communities, hold vital potential for tangible, practical effects in grappling with the immediate and long-term needs of historically marginalized communities facing multi-crises and occupying contexts of oppression. Thus, we explore experiences where sustaining transitions between designing together and taking roles across levels of involvement with the latter, allow all of us to try out various forms of knowledge and skills building, critical understanding, and connection to reality. We then weave together the experiences outlined with reflections on two effects of committing to collectivity in collaborative design with indigenous communities: (1) more-than-academic encounters with communities and (2) redistribution of participation related to knowledge, production, and burdens.

Author keywords *commitment to collectivity; mundane and strategic work; participatory design; indigenous communities*

1. Introduction

In its attention to social change, design research has increasingly problematized ways of approaching inclusive and equitable collaboration (e.g., Light and Akama, 2014; Hodson et al., 2023). In particular, encounters with realities beyond those of the Global North and its prevailing neoliberal capitalist economy have prompted active pursuit of more meaningful engagement with diverse communities, facing complex challenges. The field's connection to social change has involved linking work with the peripheries and contexts of oppression in the world's various Souths—focusing on issues such as empowering indigenous peoples (Laiti 2021; Borzenkova et al. 2021), confronting neo-colonialism in our methods (Barcham, 2019), resistance and emancipation (Batista e Silva, 2023), support for vulnerable populations' agency (Gautam and Tatar, 2020), and sustainable social innovation against the backdrop of global-local tensions (Fuad-Luke, 2009). While challenging the dominant perspectives and the related design processes and products has brought diverse voices and experiences into designing for social change and has broadened out from traditional approaches to facilitation and participation (e.g., Papanek, 1973; Margolin and Margolin, 2002), the necessary critical transformation requires more. As historically excluded communities and territories continue to feel the impact of dominant structures of power and dispossession, bound up with multiple crises, we find it crucial to continue challenging the ways in which the various approaches and positionalities can either assist or counteract asymmetric/extractive research relationships.

Tackling this issue necessitates orienting the collaboration for social change toward the perspective of diverse communities more strongly: asking which spaces in our collaborative efforts are dedicated primarily to directly addressing both the immediate and the long-term needs of each community we work with, as opposed to catering to academic or design demands. We argue that taking into account and making visible those spaces of collective action that are often overlooked in academic circles helps everyone involved to uncover opportunities for the design interventions to transcend the academic sphere further and engage with complex, multifaceted realities.

This attention within the realm of participatory design requires a nuanced understanding of what some have called *mundane and strategic work*: all kinds of work necessary to make collaborative design function and render design methods effective in real-world projects (Hyysalo and Hyysalo, 2018; Botero et al., 2020). To capture the range of mundane work in collaborative design, Hyysalo and Hyysalo (2018) cite co-ordinating workshop spaces, finding participants, organizing materials, and estimating what can be achieved in a specific time, and all other activities that can be seen—or not even—as lowbrow design, such as data analysis, secretarial work, handling recruitment, and keeping the work spaces in order. The work of strate-

gizing collaboratively, on the other hand, entails attending to how collaborative design can serve purposes beyond design itself. In their account, this often involves integrating design participation with marketing, handling public and stakeholder relations, and implementing organizational changes. Considering collaborative design's mundane and strategic efforts alike can yield greater insight as to what it takes to sustain projects related to the corporate, public, and third sector on multiple time scales and ensure the infrastructure also for peer-to-peer open-design initiatives. Considering concrete results in this context, Botero et al. (2020) have emphasized how these efforts translate into design methods and outcomes. Applying a mundane- and strategic-work lens when examining citizen-designer or user-designer communities has led to enhanced services, opportunities for democratic engagement, better user experiences, and more distributed design.

Examining mundane and strategic work in collaborative design research not only acknowledges but also amplifies the importance of the spaces where nuanced phenomena and alignments essential for those engaged in the design process emerge. Inspired by this awareness, we have identified a valuable opportunity in using this lens to examine collaboration *with* indigenous communities, beyond the most prominent sectors of society. This tool should shed greater light on mundane and strategic conditions' permeation of design research in other settings. There is much we can learn from communities that while facing conditions of oppression, safeguard their knowledges and build organizational capacities to resist it. In these contexts, wherein designers directly collaborate with oppressed communities, can support their participation in citizenship processes and challenging power structures woven into state and global hegemonic systems—contexts that exhibit a mounting need for establishing a "stronger tie between explicit participatory methods and capacitating the user community to design for itself" (Botero and Hyysalo, 2013). Here, we recognize mundane and strategic work's links to infrastructure and infrastructuring —the social, material, and technical practices, resources, and arrangements crucial for the long-term reproduction of design efforts. The concept of infrastructure has been explored in participatory and social design from various perspectives (Karasti, 2014; Hillgren et al., 2011; Crabu and Magaudda, 2018, to name a few); however, mundane and strategic work provide explicit insight, aiding the understanding of collective action spaces in and out the design process. Spaces that could enable people involved in a design process to develop the tools and knowledge necessary to sustain—or keep sustaining—acts of resistance and the reproduction of life otherwise, surpassing the infrastructure of the design, in contexts of designing for social change.

This article explores the effects of committing to collectivity, when considering the role of mundane and strategic work in cultivating a powerful action space for design research with historically marginalized communities, (indigenous communities, part of a regional social movement). *Commitment to collectivity* involves a deep

exploration of mechanisms for meaningful involvement within community-based production, and is one of four interrelated emerging commitments for collaborative design from the margins: visibility, sustainment, tensions, and collectivity (see Pinto et al., 2022). In practice, commitment to collectivity involves continuously infrastructuring the design research to respond to and reciprocate with the marginalized communities' histories of collective work—knowledge sets and practices of resistance as tools of counteracting dominant structures—that underpin and inform the research collaboration. This approach is learned from the communal processes that shape Indigenous communities, where the social entrenchment of collective priorities asserts their lifeways amidst the structural oppression of imperial modernity and liberal individualism (Simpson et al., 2024; CONAIE 1994; 2012). It guides design processes toward distributed action, with the research community striving to act as a collective. Here participant relationships are principally defined not in terms of users and designers but, rather, as co-researchers committing to multifaceted, multi-engagement actions.

We focus on this commitment as it illuminates how sustaining mundane and strategic work in research settings involving designing with indigenous communities and social movements could help redistribute participation in knowledge generation, production processes, and research responsibilities and burdens. This redistribution in participation strives to guide design research efforts toward supporting resistance processes and critically counteracting the reproduction of inequalities through concrete actions, in settings that differ to corporate, public or civic, and contexts of the Norths. We argue that frequently neglected spaces for mundane and strategic work, while hard to incorporate into the prevailing academic narratives, hold vital potential for tangible, practical effects in grappling with the immediate and long-term needs of communities facing multi-crises and occupying contexts of oppression.

The empirical foundation for our argument is formed by the authors' work on collective research and design of a system of pictograms with indigenous youth, communities and organizations in the context of the Ecuadorian Amazon. The pictograms (see appendix A) were used to building *own* representation resources and making visible different ways of marginalisation from university and education, that indigenous students experience, particularly deepened in times of multicrisis. For this article, the focus is *not* on the pictograms as semiotic or communicational tools, or as a part of participatory design methodology, as these aspects have been extensively explored in other work (see Pinto, Julier, Tapia, et al., 2023; Pinto, Botero, & Julier, 2024). Instead, attention is directed towards the collective efforts that infrastructured the design intervention, and the political interdependencies evolving around the design of the pictograms. This shift is crucial for understanding and sustaining processes and work parallel to or beyond design research for social change, as these efforts created spaces for maturing professional skills, expanding indige-

nous leadership competences, and reactualizing situated knowledge and practices, connected to long-term necessities of the collective. Thus, we centered on this approach as it encouraged all of us involved to explore various forms of knowledge and skill-building, which, in turn, offer opportunities to further advance our critical tools to contest prevailing complex realities.

To establish some background for understanding our positioning and design intervention, here, we introduce *education in multicrisis times in the Ecuadorian Amazon*. The Amazon region is situated at a confluence of multiculturality, biodiversity, and inequality. The region is home to various indigenous communities and mestizo populations, encompassing 11 indigenous nationalities. Spread over 120,000 km2, it constitutes almost half of Ecuador's mainland. Despite its biodiversity and natural wealth, the region faces challenges due to extensive resource extraction, primarily oil. This contradiction between environmental richness and economic exploitation creates complex inequalities (Arsel et al., 2019). In this region, indigenous communities face limited access to vital services due to their economic disadvantages within the nation. Simultaneously, their territories and social resources face continuous damage, exacerbating their challenges for social and economic reproduction. This situation compels indigenous youth and their communities to navigate both historical and emerging multi-crises to access education, especially at the university level.

Despite government efforts to address the demands of the indigenous movement, such as integrating the *Plurinationality* concept and *Buen Vivir* principle into the Constitution, which helped establish the right to Intercultural Bilingual Education throughout the national public education system, challenges persist for indigenous university students. These challenges stem from the struggle to assimilate into knowledge structures rooted in urban contexts and influenced by the global Anglo-European paradigm ((Pinto, Barriga, Machoa & Minoia, 2023; Hernández Loeza, 2016), where specific social and economic privileges are required, leading to a disconnection from their languages, cultures, and communitarian ways of doing and knowing. This disconnection exacerbates existing disparities and marginalization, especially in times of crises, like the pandemic. An article co-authored by indigenous youth (Pinto et al., 2021) highlighted intertwined emergency and structural conditions, criticizing inadequate pandemic responses hindering virtual schooling due to factors such as geographical remoteness, mobility issues, unstable connectivity, limited technology access, unequal resource distribution and cultural exclusion. Beyond the immediate crisis, indigenous students, communities, and organizations continuously seek justice through creative political-educational actions, enhancing protest mechanisms and tools, and sustaining organizational and decision-making spaces. Access to education with a decolonizing focus emerges as a vital resistance pathway, empowering these communities to challenge and reshape their living conditions (Walsh, 2009; Arias-Gutierrez & Minoia, 2023). This struggle goes beyond mere inclusion, focusing on non-formal education and the development of univer-

sity proposals aligned with knowledges and practices of each nationality, supported by appropriated resources (Pinto and Nango, 2021).

Against this background, our design practices and learnings are shaped by the context of *the indigenous movement and resistance in the Ecuadorian Amazon*. This framing serves to clarify and acknowledge the rich histories, knowledge systems, and practices of resistance that support our design intervention. Indigenous resistance takes diverse forms, affirming indigenous identity and propelling social change through dynamic channels. These efforts are intricately linked to specific political actions facilitated by indigenous organizations, as highlighted by Quijano et al. (2014). In the Amazon region, indigenous nationalities engage in resistance to safeguard their territories and ways of life, often in opposition to both local and transnational neoliberal interests.

Indigenous communities navigate oppressive conditions while fortifying their organizational strength. Ecuador's indigenous movement, arguably the most robust and influential in Latin America (Yashar, 2005), exemplifies this resistance. Through highly effective mobilization and organizational capabilities, the movement actively participates in significant dialogues in areas such as policy development, Intercultural Bilingual Education, and institutional design. These engagements are geared toward driving change across multiple levels, embodying a profound connection between organizations' leaderships and grassroots everyday experiences. The movement is grounded in a *communitarian* societal structure, where the community—elders, children, young people, and family members—are actively encouraged to participate in different levels of society, and territory is included as a social being (CONAIE, 1994; 2012). The organizational structure facilitates dialogue not only within the pluricultural indigenous context but also with other mestizo or northern contexts. These particular ways of doing and knowing of indigenous nationalities opened for us a collective understanding of *with what* and *where* to practise, preserve, and revitalize political, economic, social, and cultural systems (Pinto, Botero, & Julier, 2024).

In the following sections, we begin by presenting our design intervention to briefly introduce our methodology, and center on the people and the organizations involved. Subsequently, we elaborate on results of the experiences of mundane and strategic work related to our pictogram-design process, highlighting how committing to collectivity gains expression in this specific setting and context. In the discussion section, we weave together the experiences outlined with reflections on two effects of committing to collectivity in collaborative design with indigenous communities: (1) more-than-academic encounters with communities and (2) redistribution of participation related to knowledge, production, and burdens. We conclude by reflecting on the ways in which these effects respond to the 'long emergency' by sustaining spaces of collective action amid design and beyond it.

2. Emergencia de Educación en la Amazonía: Designing and Researching *with* Indigenous Amazonian Nationalities

Emergencia de Educación en la Amazonía (Education Emergency in the Amazon)—EEA, is an ongoing participatory design intervention that began in 2020. It was driven by the efforts of the Confederation of Indigenous Nationalities of the Ecuadorian Amazon, or Confeniae, and university students representing Amazonian nationalities present in the region. Their motivation was to bring attention to and criticize how the response to COVID-19 significantly exacerbated historical structural barriers to higher education access for indigenous peoples. The project thus revolves around a *research collective*, consisting of youth co-researchers, indigenous leaders, and communities from each nationality, with support from Confeniae education leader and a design researcher connected to the indigenous movement. Initially, the intervention focused on collaboratively designing a pictogram system for popular education and communication processes to support identity strengthening (Pinto and Botero, 2021; Pinto, Botero, & Julier, 2024). However, as the process evolved and in response to the collective's research needs, the project organically expanded its practices to sustain politicized spaces for education and action involving youth of indigenous nationalities, their communities and organizations.

The groundwork included collecting data on education in the Amazon (in February–December 2021) in the course of designing and discussing various versions of pictograms (between January 2021 and October 2022). The resulting pictograms and data have been used for visual resources (see Appendix B), which have already supported political-communication practices that utilize multiple channels to address issues related to the pandemic and extending beyond it. We anticipate that these resources will support broader advocacy initiatives as time unfolds, as the research collective's ongoing exploration of knowledge and skill-building forms has allowed us to reflect on and address underlying systemic issues.

This supposes management of two overlapping timelines: in the first timeline, prompt actions and reflections responded to the emergency between 2020 and 2021, where design research focused on delineating, validating, and sustaining spaces of connection and action, while producing materials together. In the second timeline, which started with the project's inception, extended research and practice are oriented towards responding to the 'long emergency'. Here, the research collective further nurtures and sustains action spaces. The research design is oriented towards adapting to new scenarios and generating necessary resources (cultural, social and economic) to sustain the project in the long term, while simultaneously activating and disseminating the materials produced.

Empirical work has been carried out over more than 34 months in the Ecuadorian Amazon by the first author. The project built the body of grounding data through workshops, meetings, interviews, and an ethnographic field diary, all anchored in

ongoing action research that has involved coordinating the pictograms' participatory design, finding resources, engaging in mentoring, and building connections. Additionally, a considerable proportion of the data takes the form of text messages and voice-message (WhatsApp) exchanges, on account of the co-researchers' locations spread across diverse Amazon-region territories. In the various activities, the co-researchers in this research collective shift in their levels of centrality within the overall project; we elaborate on this in the next section.

3. Mundane and Strategic Work in Collective Pictogram Design for Resistance

In the EEA component of the resistance efforts, committing to collectivity stimulated all participants in the collaboration process to act as subjects of action, simultaneously nurturing a paradigm of strengthening particular capabilities in connection with a felt need for concerted responses that counteract the inequality knots affecting indigenous Amazonian students. For real-world design practice, this focus on collectivity as a source of strength guided the project's efforts to effect social change, which required all participants to travel across various levels of involvement.

For example, the first author, Nathaly Pinto, is an Ecuadorian communication designer and researcher of *mestizo* heritage who works between Ecuador and Finland alongside indigenous youth and organizations to bring greater visibility to their struggles while creating spaces of deliberation and learning. She acts as a graphic designer (e.g., illustrating drawings and explanations of young co-researchers that transform into pictograms) and project co-ordinator, a role she has filled ever since helping establish the project (e.g., strategizing design actions with indigenous leaders), while also undertaking mundane and strategic activities (e.g., filing meeting notes and drafting administrative documents) and acting as an ally or *compañera* (e.g., performing caring work and enacting reciprocal relations with youth co-researchers and leadership bodies). Moving between roles has helped her to respond to the collective's immediate as well as long-term needs, while also permitting her to take a step back when other co-researchers lead certain activities.

The second author, Efrén Nango, is an Ecuadorian-Shiwiar environmental engineer whose responsibility for education leadership at Confeniae—serving in 2020–2023— encompasses the entire Amazonian region. His work there involves revaluation of indigenous knowledge and the development of skills to sustain it among leaders and grassroots members of various Amazonian communities. Ever since he helped initiate the project, he has supported it through expertise in socioeconomic environmental development of Amazonian nationalities and purposeful leadership while simultaneously acting as an indigenous leader (e.g., strategizing and guiding the project to represent indigenous organizations' and peoples' collec-

tive decisions). His multi-level efforts include undertaking mundane and strategic work (recruiting youth co-researchers, arranging encounters with organizations, etc.). His motivating influence (encouraging and supporting the co-researchers, sustaining an alliance relationship with the first author, etc.) has been particularly important, and extensive knowledge of the history of the territory and communities has played a crucial role in connecting the youth co-researchers and their work to indigenous organizations and their struggles.

Likewise, the youth co-researchers take on the role of young indigenous leaders, holding assemblies with their communities and articulating the project's aims, while simultaneously acting as intercultural researchers who write field diaries, gather data in their respective territories and languages, and translate the information for the rest of the group. Among their mundane and strategic actions are registering attendance at assemblies and drafting meetings' agendas. Their work of sustaining dialogue in their territories and with the communities was crucial for understanding what to represent through the pictograms, and they continue to enrich the refinement of the research infrastructure—for more reciprocal activities and better responding to young students' needs and capacities—with their experience.

These transitions between roles and across levels of involvement distributed the learning and skill-building, whether during our design processes or at times when we were not designing but acting collectively in other ways. On the one hand, collectivity redefined designers' role of 'facilitator of community development'; co-researchers became subjects of action and participants in the learning experience. On the other hand, it accentuated the significance of mundane and strategic tasks. These became acknowledged as opportunities for collective thinking about where to reproduce tangible, practical capabilities. In turn, we progressively learn to better identify actions that are able to address immediate and long-term community needs while connecting to political-educational needs.

To start building the research collective, we had to reach university students who could express the nature and extent of the education emergency. For this process, inclusion of all nationalities represented by the confederation alongside outreach to distant communities, would prove vital. To recruit youth co-researchers, Efrén commenced voice-messaging-based consulting with leaders from all nationalities' organizations, who, in turn, began discussions with the communities in their territories. The Amazon's territorial dispersion of nationalities and irregular connectivity already encouraged asynchronous communication via platforms such as WhatsApp, so he was able to adapt well-established but complex practices of communitarianism accordingly. Activation through partial virtuality established dialogue to link diverse grassroots worlds for deciding together. Thus, the system of youth co-researchers was established: indigenous communities nominated a student to represent each

nationality, they informed first and second author accordingly, and joint work with the young people began.

Through this *mundane* task of recruiting youth co-researchers, we shaped our methods to utilize the limited resources available creatively for data collection, analysis, and collective decision-making. This work has informed the ongoing design of the pictograms. We developed methods that focus on indigenous youth co-researchers collecting data and sharing information with their nationalities in the territories in tandem with collaboration with the authors. Our practice for implementing those methods has emphasized community-driven design, facilitated by a partial-virtuality approach. The early strategy, which entailed such actions as establishing a monthly stipend for helping mitigate technical disparities (such as issues posed by Internet expenses), ensured that all students could collect and share data under similar technical conditions. For our project, this approach allowed us to sustain the research process in a manner that avoided reinforcing asymmetric relationships. Simultaneously, it contributed to meeting students' immediate needs (mainly for access to virtual classes during the pandemic) and was aligned with their long-term objectives.

Once each nationality had reached consensus on its respective pictogram design and a final version emerged, it had to be presented to a national regional assembly for an official validation decision. As an education leader, Efrén placed the pictograms and access to higher education on the Confeniae Annual Regional Assembly agenda. In the lead-up to the assembly, youth co-researchers (serving as spokespersons), with Nathaly co-ordinating, collaboratively planned the presentation in accordance with indigenous-movement procedures. The planning process, which involved multiple Zoom meetings, was not restricted to this single task, however. It encompassed arranging transport for participants from their respective territories to the assembly location in the central Amazon, creating materials to support the presentation, discussing conventions related to traditional clothing and face-painting, and participating actively in the entire event.

Through these *strategic* actions for socialization of knowledge and materials, the pictograms were officially validated and shared widely with regional and national indigenous leadership groups and grassroots representatives (as the assembly's resolutions attest; see Confeniae, 2022). This action opened a space for discourse for youth co-researchers to speak out as advocates for resistance, fuelled by identity and representation and to denounce the violation of indigenous students' rights by referring to both personal experience and the data they had collected and presented to indigenous leaders (Figure 1). Furthermore, the project continues to sustain a space cohering around the design process that extends beyond the purposes of design in its own right: one rich with connections between young people and their nationalities' communities, organizations, and extended presence to their associated territories. This high- and low-level work, to develop skills and knowledge that strengthen

the nationalities' institutional capacity, takes into account that youth taking on leadership roles is a direct reflection of healthy community/territorial democracy and strong organizational footing (Pinto & Martínez, 2022).

Figure 1: Shakira Yumbo, Ai'Kofán co-researcher; Yankuam Wampash, Shuar co-researcher; and Lizbeth Tánguila, Kichwa co-researcher; presenting pictograms and data on access to education for Amazonian nationalities to regional and national indigenous leaders and grassroots representatives. Confeniae Annual Regional Assembly (October 28, 2022). Source: Archive of the project.

4. Effects of Mundane and Strategic Work when Designing with Indigenous Communities

The experiences outlined above, in conjunction with numerous others, affirm the importance of mundane and strategic actions in facilitating sustainable collaborative design and corresponding methods that contribute to real-life projects (Botero et al., 2020). Our project in the context of collaborative design with historically marginalized communities (Pinto et al., 2022) demonstrates well how these actions can translate into spaces for deliberation and for learning where it is possible to accompany and contribute to ongoing processes of resistance. Such spaces afford critical dialogue that can exhibit concrete effects far beyond the design itself:

a. More than academic encounters with communities

Commitment to collectivity, in interdependence with mundane and strategic tasks, nurtures a continuous connection to the day-to-day life of the research collective. This underscores the potent social conditions of production involved—mirroring the pragmatic and affective ties between politically organized indigenous communities (Simpson et al., 2024). One example became visible in the course of collaboratively preparing the Confeniae Annual Regional Assembly presentation of data on access to higher education and validation of pictograms. Such processes require young researchers to learn of or further connect to indigenous organizations decision-making spaces. Drafting the agenda of the presentation compeled the design researcher to ground academic vocabulary in real-life contexts. This occurs, for example, as students question the need to use the term 'structural marginalization', and share how they experience it. These collective actions, which go beyond the development of a lexicon connected to life in nationalities' territories, have later manifestations. For instance, they prompted post-Zoom-meeting conversations to discuss the future with youth co-researchers soon to graduate and WhatsApp messages sharing updates on how indigenous leaders and communities were faring during an 18-day national strike in 2022 (see following whatsapp group dialogue excerpt).

Excerpt from whatsapp group dialogue, 14–19 June 2023
Yankuam: Greetings compañeros, in the south [of the Amazon region] we have joined the national strike. I hope everyone is well.
Nathaly: How is everybody?
Royer: We continue, here in the struggle at Shell [at the center of the Amazon region]
Efrén: Strength youth!. Let's all unite to defend rights.
Shakira: That's why we are protesting: to defend our rights. The strike […] is to respond to the needs that the people have [North of the Amazon region].

The cumulative mundane and strategic effort creates spaces in which each participant can engage with nodes of every other's experiences and knowledge of a shared yet distinct reality. The resulting holistic setting affords the challenging of traditional assumptions under which encounters are centered on data-based sympathetic knowledge-gathering that serves mainly design outputs. Thus, it supports striving at the same time for profound, more-than-academic encounters with communities. Even more than cooperation, this collaboration in and out of design research facilitates collective development of knowledge, resources and care—*en masse*—to counteract dominant structures. 'In' the design project, pictograms were created, extensive data was gathered, and we had experienced positive outcomes from the design research production. 'Out' of the design project, when planning presentations for assemblies, indigenous youth were actively empowered to criti-

cally occupy decision-making spaces in indigenous organizations. They reflected on political positions when establishing lexicons; redirected the project when discussing the future of young indigenous professionals; and struggled together when supporting during a strike, and other collective actions to guarantee collective rights. In the latter, encounters focusing on the relationships intertwined by the research collective, rather than the needs and time frames of the design project, help us nurture, coalesce, and grow communitarian sensibilities, organizational capacities, and a solidary social fabric. These more-than-academic encounters address the social and political needs of the research community and linked indigenous communities and organizations, to the extent in which they lay organic foundations for sustained social change effects of the research process and practice in spaces and through relationships not regulated by the central collaborative design project.

b. Redistribution of participation related to knowledge, production, and burdens

When committing to collectivity, mundane and strategic work highlight the social relations within research and the spaces where yields—such as knowledge and products—and burdens—such as emotional labor, time commitment, and effort—are redistributed (Pinto, Julier, & Tapia, 2023). For example, when preparing to establish our collective, Efrén observed that resources and opportunities were typically concentrated among larger nationalities or in territories closer to Confeniae's headquarters in the central Amazon. This awareness prompted us to reach out to all nationalities, especially minority ones, and cover all parts of the region —decisions partly sustained through the distribution of funding, prioritizing this decision. Through the mundane task of recruitment, Efrén created space for nationalities and territories with fewer opportunities to participate, a space continuously activated in other moments of the research. Another example is the co-researchers' proposal for bi-monthly videoconferences, where we reviewed our work, reflected on it, and planned our next steps. This strategic task created a space to discuss the future with youth co-researchers who, between 2020 and 2023, had strengthened their professional skills and capabilities as indigenous spokespersons and researchers through project activities and university studies. A subsequent strategic task involved creating a database of indigenous professionals, presenting research work and materials to civil society organizations working in the region, and preparing young individuals, especially from minority nationalities, for work in other projects across the Amazon. These new mundane and strategic tasks guide actions to continuously transfer and reallocate research yields to the research collective and their linked communities and territories. They align with the regional indigenous movement's efforts to strengthen the human talent and institutions of Amazonian indigenous nationalities, enabling them to decide on projects that

affect the sustainable use of their territories based on their worldview and ancestral knowledge (Confeniae, 2023). Through this effort, knowledge and research production could be further used as critical tools for communities to design for themselves (Botero & Hyysalo, 2013), in the context of addressing socio-environmental multicrises in the region (see following field diary excerpt, and Figure 2).

Excerpt from Jeaneth's field diary / 12 July 2023
First workshop. We begin with the presentation of each member. The youth of Quijos [nationality] travelled from Archidona-Tena to Puyo (2 hours) and the youth of Sapara [nationality] from Tarqui-Pastaza (25 minutes) […]. They expressed their views about the pictogram workshop. Both were nervous, […] because they thought that designing their nationality [pictogram] would be easy but realized that even the smallest details are important for each nationality. They were happy to share their knowledge with everyone. […]. I remembered everything I did when I started designing my nationality [pictogram]; I felt confident in myself.

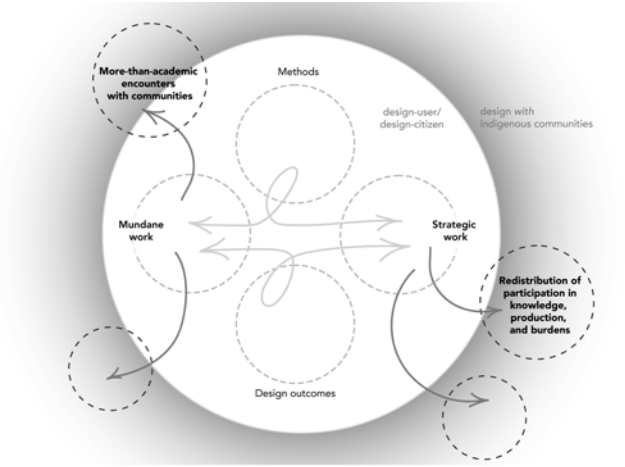
Redistribution fostered by collectivity in mundane and strategic tasks, also guides research actions to visibilize burdens connected and unrelated to sustaining the research. This exercise facilitates managing and appropriating these burdens together, better responding to inequalities and systemic problems, the research collective confronts. For example, to access Intercultural Bilingual Education, youth mobilize between centralized universities and their territories, balancing roles as members of a nationality and an intercultural university community. This situation demands significant effort, time, and dual responsibilities, fostering unique intercultural knowledge but potentially leading to community separation at times and impacts on their wellbeing (Pinto et al., 2021). To redistribute this burden, we adapt the research design to accommodate each youth researcher's time and capabilities. This involves transferring efforts to the project's research design and coordination, requiring substantial care and resources to expand the design project's limits. Additionally, we promoted dialogue 'out' of the design process to extend dedication of time and care to collective well-being.

Figure 2: Jeaneth Mashian, Achuar co-researcher, autonomously incorporating pictogram design into her role as an intern in Confeniae's Plan de Implementación de Medidas y Acciones REDD+ project. This initiative focuses on the political-educational management of forests, biodiversity, and territories of Amazonian Nationalities, aimed at combating climate change. (July 12, 2023) Source: Archive of the project.

These involved non-formal education spaces and direct conversations to address concerns about the responsibilities and preoccupations of youth researchers as spokespersons for their nationalities, as well as challenges related to their student lives, facilitated by design researcher or the Confeniae education leadership.

Effects of both mundane and strategic work when designing with indigenous communities, draw attention to how we conceive and execute design interventions for social change. Our approach and positioning, creates and sustains spaces for collective action to tackle social issues and resist oppression together, taking these spaces—that extend beyond academic infrastructures—as generators of constructive tensions rather than limitations in design research (Figure 3).

Figure 3: Effects of mundane and strategic work when designing with indigenous communities, organized and linked to an indigenous social movement, extending beyond academic infrastructures. Adapted from "Figure 3. On interplay between mundane work and strategic implications." by Botero, Andrea, Sampsa Hyysalo, Cindy Kohtala, and Jack Whalen. "Getting Participatory Design Done: From Methods and Choices to Translation Work across Constituent Domains" 14, no. 2 (2020, p. 5): 19.



However, it is important not to romanticize these effects sustained through the research collective's communal absorption of work, care, and tensions, to avoid obscuring historical conditions of exclusion and injustice supported by wider structures of inequality (Pinto, Barriga, Machoa, & Minoia, 2023). While spaces for collective action allow the research collective to build knowledge and skills, develop critical understanding, and connect with reality—necessary for grounding design research and practice for social change—they require significant effort to mobilize resources and maintain alliances with communities, often conflicting with dominant academic timelines and infrastructures. For example, participation by design researchers yields immediate and mid-term tangible benefits, enhancing their social and economic capital and often leading to greater stability beyond the research project. Achieving similar transitions toward change for communities requires allocating economic, social, and cultural capital, such as acknowledging indigenous knowledge bearers without conventional titles. This redistribution is difficult to obtain and sustain under current research funding policies, timelines, or objectives, which need to be stretched. Thus, the effects of mundane and strategic work, sustained through commitment to collectivity, contribute to ongoing resistance actions for social change for indigenous communities and linked social movements as a long-term goal. Commitment to collectivity and both mundane and strategic work

can be essential in a bottom-up research strategy to address challenges, necessitating structural changes to further prevent asymmetric or extractive research dynamics.

5. Conclusions

> It is crucial for the youth of various communities and nationalities to keep preparing ourselves to advocate for our territories […], to make visible how indigenous communities and nationalities remain the most disadvantaged in terms of education, health care, and basic necessities, irrespective of the fact that the country's wealth stems primarily from […] the Ecuadorian Amazon. (Kichwa co-researcher Lizbeth Tánguila, speaking online from Napo, Ecuador, at the EEA research collective's bi-monthly meeting of 23 March 2022; data ID L-Bi-Zoom2.)

At the time of writing this article, some of the conditions affecting students in the wake of the pandemic had eased, yet intertwined socio-environmental inequalities remain, perpetuating the 'long emergency'. Using the lens of mundane and strategic work in alignment with committing to collectivity for collaborative design from the margins fostered vigilance and critical perspectives that extend beyond academic interests and demands, taking into account broader contexts and historical relations in which the design intervention is sustained.

Our approach and positionality settled a different research and practice relationship than previous mundane and strategic work in collaborative design (Hyysalo & Hyysalo 2018; Botero et al. 2020), that resembles an interconnected research collective more than a cooperating user-design or citizen-design community. It is worth noting that the latter, from a position woven into the various sectors, undertake design to exercise citizens' rights or enhance their user experience, while marginalized communities and social movements have histories of systemic oppression that pose challenges to their equal and just participation in society (UNICEF, Social Behaviour Change, 2024). Therefore, it proved impractical and undesirable, if not impossible, for design collaboration with indigenous communities, to separate research practices from historic and everyday life practices or setting wider social change as achievable within the timeframe and boundaries of a conventional design research intervention.

However, when tensions are addressed and challenged, incorporating the examination of mundane and strategic conditions' possible influences on design research, design for social change *with* indigenous communities can be enriched as a way of pushing current research boundaries. Mundane and strategic tasks can aid opening spaces for collective action that encourage all participants to experiment

with different forms of knowledge and skill-building, with a grounding in everyday concerns, to challenge the prevailing reality from its members' unique vantage points. Spaces for collective action function most effectively when they align with a communitarian societal structure (CONAIE 1994; 2012), emphasizing collectivity when designing from the margins (Pinto et al., 2022). In this context, spaces cultivated through this connection can facilitate *more-than-academic* encounters with communities and promote the *redistribution of participation related to knowledge, production, and burdens*. These dynamics guide the research process toward nuanced distributed action, where the research collective takes roles across levels of involvement that imply 'designing together' for immediate issues and systemic horizons simultaneously, accompanying co-researchers to transition to design *by* communities. In this framework, effects of mundane and strategic work with indigenous communities that are challenging to sustain, visualize, and incorporate into the prevailing academic narratives can contribute to a collective history of resistance against dominant structures, both within and beyond design projects.

Statement on compliance with ethical standards

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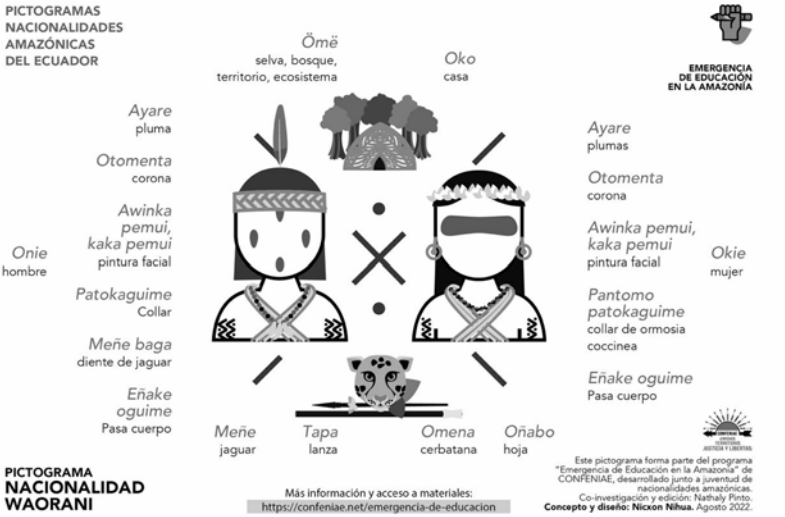
Appendices

Appendix A: Amazonian Nationalities of Ecuador Pictograms

Version 6.0 of pictograms of indigenous Amazonian nationalities of Ecuador. This is the version of the work with students and their communities validated after going through an official process of negotiation and public consultation with authorities and representatives of nationalities. Quijos and Sapara pictograms are currently under development (see project website Confenaie, 2022).

Waorani nationality pictogram poster. Pictograms showcase representative elements related to history, territory, rituals, medicine, food sovereignty, flora, fauna, and warrior knowledge. A series of posters for each nationality pictogram was designed as educational-communication tools, to further highlight the diverse languages and generations of knowledge involved in the representations (see project website Confenaie, 2022).



Appendix B: a sample of visual resources using pictograms

Pictograms as tools to draw attention to students' struggles. An infographic co-designed by Sabina Guerrero, Siona co-researcher, showing that 92% of Siona young people between the ages of 18 and 29, after completing their secondary education, could not access institutions of higher education during the pandemic. This infographic was used in an article for an Amazonic magazine, written by the collective to draw attention to students' impacted conditions during Covid (Pinto et al., 2021). Source: Archive of the project.

Chapter 4 / Crisis and Education

This Chapter emphasises how design education is an essential factor in the design of humankind's collective future. Contributions to this Chapter focuses on how design education is changing in response to various crises affecting society and explores new pedagogical approaches and methods for teaching design in the context of ongoing and anticipated crises. This Chapter considers both the role of design education in shaping designers' understanding of crises and their ability to contribute to addressing and mitigating those crises. Contributions included here explores how design education can help develop the knowledge, skills, and values that designers need to be effective agents of change in times of crisis, as well as those that inquire about how design education can, more generally, foster critical thinking and a sense of social responsibility among designers. Topics in this Chapter touch on the broader implications of changes in design education for the design profession and for society as a whole, and how design education can contribute to developing a more sustainable, equitable, inclusive, and resilient future in a permacrisis, considering a posthuman perspective as well.

Applying Human-Centered Design Methods to Social Design Education

Antonia Monjo Palau

Abstract *This paper draws from the experience of applying the Human-Centered Design (HCD) approach to short and medium-term social design projects in design education. It is intended to be a starting point for further reflection on how HCD can contribute to social design education, its boundaries, and future lines of research.*

HCD has been widely used to create products and services, putting people at the centre of the design process. HCD aims for designers to understand and connect with the intended users' characteristics, needs, and barriers, improving the ideation and prototyping process from the early stages.

Applying HCD principles may help students of social design projects better understand people's characteristics and context (Zoltowski et al., 2012), especially if the projects confront multifactorial crises. However, its application cannot avoid some risks, such as, if poorly performed, leading students to a surface-level understanding of complex problems. Beyond the classroom, critics of HCD mention some pain points like its understanding of humans as individuals, primarily as consumers, and the need to develop approaches that help define new relations with the environment and socio-technical systems (Forlano, 2017).

Author keywords *crises; design education; human-centered design; social design; user-centered design*

Introduction

This article describes three projects at Elisava, Barcelona School of Design and Engineering, in which Human-Centered Design methods have been used as a framework to address actionable solutions in Social Design Education. All the cases correspond to brief projects in which students need to make decisions in the short term and lead to applicable design solutions. Besides the time limitation, the three cases confront crisis factors in other dimensions, as will be described later. The paper focuses

primarily on the third and most recent case, Aspasim, performed in 2023, in which some learnings obtained from previous projects were applied.

HCD and Social Design

The concept of Human-centered design (HCD) derives from User-Centered Design (UCD), a term coined at the end of the 80s in the field of Human-Computer Interaction (Wizinsky, 2022). As a design approach, UCD is oriented towards designing products and services, putting users at the centre of the process.

HCD aims to complement and expand UCD's approach, placing particular emphasis on the globality of the human dimension, which is broader than the mere "user" role (Gondomar & Mor, 2020; Giacomin, 2014). HCD aims for designers to understand and empathize with the intended users through research and promotes iterative prototyping from early stages (IDEO, 2015) (Chen et al., 2020). HCD has been traditionally employed in the design of software devices, although in the last few years, it has also spread to other design fields (Hernández, 2020).

In design education, HCD helps students to perform reasoning for problem-framing, acquire problem-solving skills for real-world challenges, and provide real-world solutions (McLaughlin et al., 2022). It may help students who participate in social design projects to understand the characteristics of people and their context, increasing the awareness of design complexity (Zoltowski et al., 2012). HCD facilitates working on short-time projects and generating action through rapid iteration to reach actionable solutions (Chen et al., 2020).

Compared to Participatory Design (PD), HCD tends to be individually oriented, and users act as informants, while PD is socially oriented, with people working as co-creators (Wizinsky, 2022). Generally, HCD designs *for* people, while PD designs *with* people (Sanders, 2002) (Sanders, 2008).

Although HCD is oriented towards creating design solutions in the private sector (Usability.gov., 2018), PD and HCD can be complementary. However, HCD presents some characteristics to take into consideration. It comes from the technology industry, and its primary objective is to define design solutions that attract users. It understands users as consumers (Hernández, 2020). These users are observed as individuals without social dimensions beyond consumption activities (Forlano, 2017).

Moreover, HCD is problem-solving-oriented. It fundamentally appeals to rationality and logic. Social design deals with complex problems, in which designers must have a broad vision of people and their context to deconstruct stereotyped narratives and consider the variety of human sensitivity (Pujadas, 2022).

With these issues in mind, throughout the projects described below, we have asked ourselves whether HCD can make a relevant contribution to Social Design

Education. Can HCD be a helpful framework for students to arrive at actionable solutions in the short term and under various difficult conditions? Given HCD's problem-solving orientation, do adjustments need to be made to this framework to respond to the complexities posed in Social Design Education projects?

HCD and Social Design Education

As mentioned, this paper will focus on the Aspasim project as a case in which the HCD framework has been applied to Social Design Education. Nevertheless, it relies on learnings obtained from two previous experiences, Decidim and Canòdrom, that will be briefly introduced before.

Beyond applying an HCD framework to Social Design Education projects, the three cases are related to crisis to one extent or another. All of them have in common the difficulties of carrying out an actionable design solution in a short time. Furthermore, Decidim is related to the crisis of democratic participation, Canodrom to a crisis of engagement with public policy, and Aspasim to the crisis of resources inherent to a non-profit organisation.

Decidim

Decidim (https://decidim.org/) is "a digital infrastructure for participatory democracy […] built entirely and collaboratively as free software" (Barandiaran et al., 2018).

Over three courses (2017–2020), Decidim and Elisava collaborated within the framework of Design for City Making Research Lab (Manzini et al., 2023). During the ten weeks of each course, students faced a different challenge related to the crisis of democratic participation: encourage democratic participation among young people, improve the registration and voting processes inherent to participatory democracy, or improve the inclusion of senior users (>65 years old).

Along the three editions, HCD allows students to understand the users' characteristics and identify some barriers (functional, cognitive, or social) that discourage users from participating.

Nevertheless, HCD leads to some difficulties: some methods must be reconsidered to better understand the context and the users (and non-users). Students must develop a critical vision of the consequences of design decisions in an environment as sensitive as democratic participation, which goes beyond HCD. There is also a need to introduce an inclusive design approach to categorise users into manageable categories and understand their diversity.

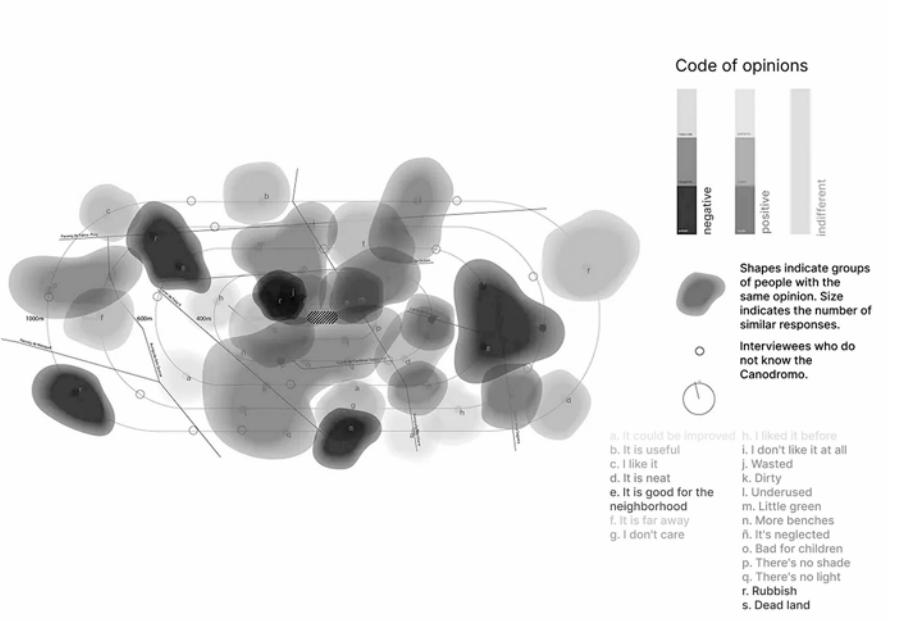
Canodrom

The Canodrom is a popular site in Barcelona, where greyhound races were held from 1970 to 2006. Over the years, the abandonment of the facilities and their posterior use for private projects drove the neighbours away from the space.

In 2021, Decidim adopted the building as the headquarters of its activities, where it wants to feature participatory activities of the neighbours so that they feel it as part of their neighbourhood again. The aim is to overcome a crisis of citizens' engagement with public policy.

Over two courses (2021–2023), Elisava, Decidim, and Barcelona City Council collaborated to rethink the public space of the Canodrom (https://canodrom.barcelona/en). In both courses, students worked on the project for ten weeks. Some participatory dynamics are included together with HCD. The methods used are desktop research, contextual observation, interviews, on-site polls, and mapping (Fig. 1).

Figure 1: Mapping the opinions collected from neighbours (Antelo et al., 2020).



After the previous Decidim experience (above), there is a will to promote a critical vision of the process among students. A narrative technique complements the HCD methods: students write a collaborative article, updated weekly. This "organic" article allows them to plan actions and relate—and therefore order—the process. As the project progresses, narration will enable students to understand a common thread in the actions performed. At the end of the term, reviewing and closing the article helps them make sense of the process and develop a critical vision (Antelo et al., 2020; August et al., 2020; Leyman & Van Hoorbeke, 2021).

The Aspasim Case

The Aspasim Foundation (https://aspasim.es/es) is a non-profit organisation created in 1993. Aspasim owns ten apartments in Barcelona, where people with severe intellectual disabilities live together, accompanied by professional caregivers. Over the years, these flats have been conditioned according to the needs of the occupants and the available budget.

From February to June 2023, Elisava and Aspasim collaborated to redesign 4 of the flats. The aim is to provide occupants with a more comfortable and adapted space. Elisava's team includes a team of professors and eight students.

This project faces some remarkable complexities. First, and shared with the two previously described cases, is the short-term characteristic of the project: students have four months to research, ideate and prototype four different environments.

Second, there is the need to work with a restricted budget since a non-profit organisation supports the project: solutions must consider the limited resources available for their implementation.

Third, the students and most professors have extensive experience in architecture or space design. Nevertheless, this project claims to fully understand the nature and conditions of the inhabitants, their needs, habits, and singularities since it is oriented to users with a wide range of functional and intellectual diversity. HCD may help satisfy operational needs and consider users' emotional needs from the diversity of the different cases.

When choosing research methods, various factors are considered:

- There are two main groups of users, residents and caregivers, and each case within these groups is unique, making it impossible for the designer to think of a standardised solution. There is a need to go beyond traditional HCD, integrating inclusive design to move away from the one-size-fits-all model and favour the one-size-fits-one approach (Inclusive Design Research Centre, n.d.).
- Carrying out participatory design actions with residents would require prior training for which there is neither time nor resources. To understand how the

residents use and personalise their space, it is essential to observe their daily routines and interactions with each other. Additionally, taking note of the customised elements and current condition of the houses would provide a better understanding of how the inhabitants utilise and appropriate the space.

- Caregivers have little time, so research actions must be well-defined and not time-consuming. They can provide valuable information about residents' routines, needs, and barriers.

After considering the given conditions, we decided to use secondary research, immersion, expert interviews with caregivers, and autoethnography (photo-journaling) as research methods (IDEO, 2015; Ellis et al., 2011). The information collected during research is analysed through affinity diagrams (Dam & Siang, 2022) and journey mapping (IDEO) techniques.

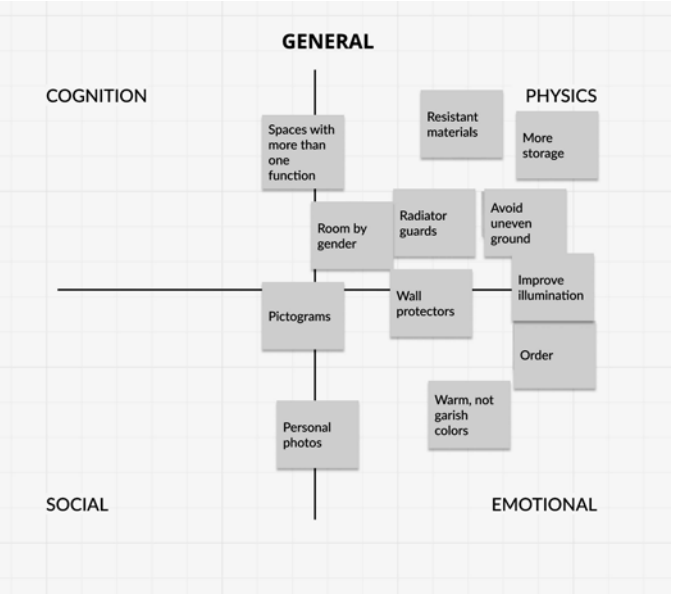
First, the students spent several days visiting the houses to collect observations through notes and annotated photographs. No videos were taken, as the recording could be sensitive and disrupt the daily activities of the residents.

After immersion, the students interviewed caregivers to better understand each apartment's routines, needs and pain points. Finally, the caregivers were invited to send the pictures taken through a day of photo-journaling.

After observing the issues, the team mapped them in four axes – cognitive, physical, social, and emotional – to understand their impact on the residents' dimensions.

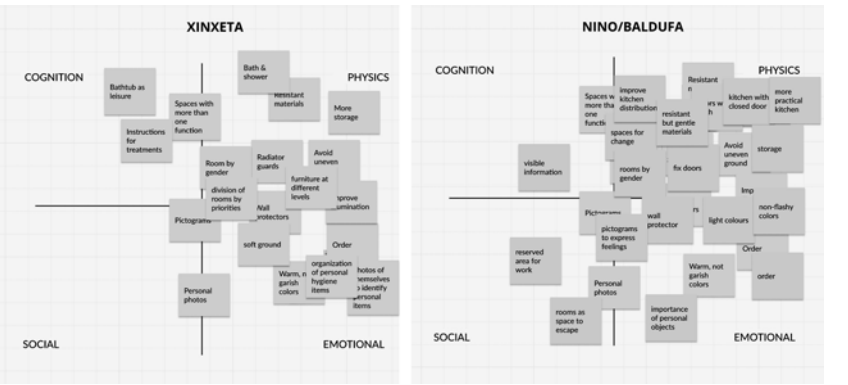
To comprehend the housing complex, the initial step involves creating a general affinity diagram (Fig. 2).

Figure 2: General map (Miro board).



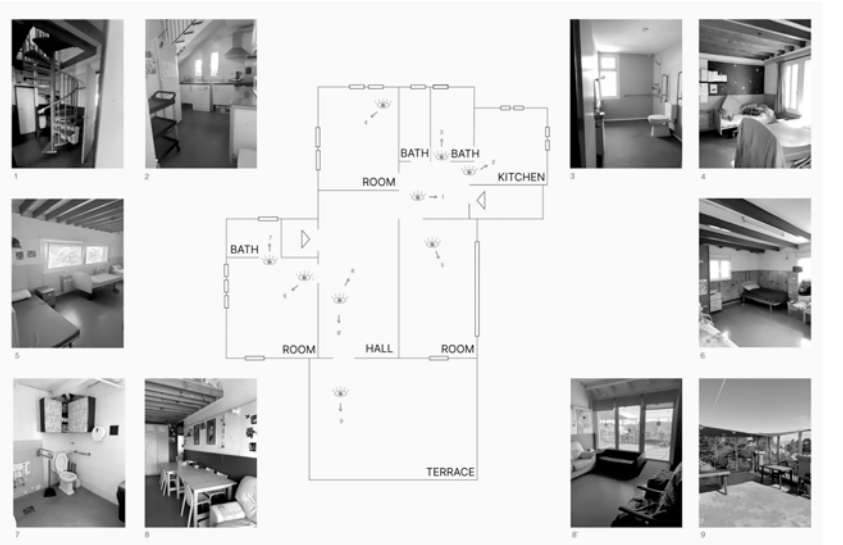
Using the initial affinity diagram, the students map the specific problems and opportunities of each dwelling (Fig. 3).

Figure 3: Specific map of two apartments (Miro board).



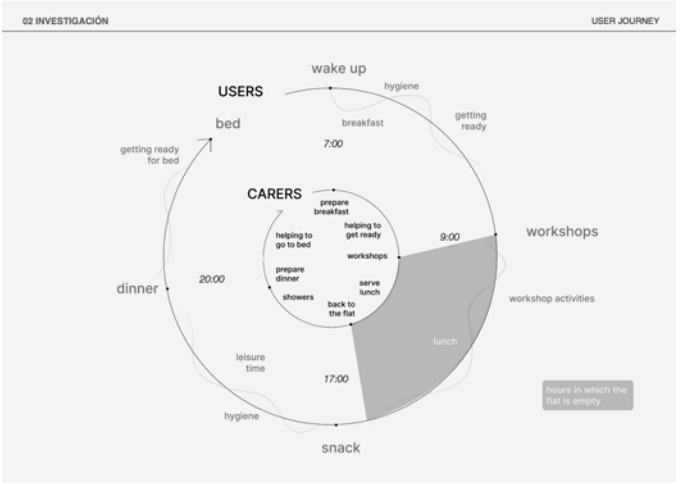
The next step is to approach these concepts in real space. The plans of the houses are used to locate the problems and opportunities, as well as the images collected on observation and caregivers' photo-journaling (Fig. 4).

Figure 4: Mapping on houses' plans.



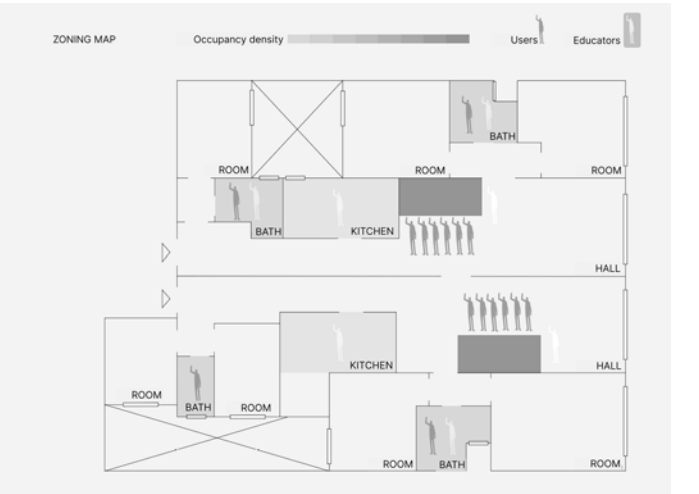
Even considering the diversity of users, students need to understand general routines. They prepare a journey map that shows the activities of the residents in parallel to those performed by the caregivers (Fig. 5).

Figure 5: Parallel user journey: understanding the daily routines of residents and caregivers and their use of the space.



The journey map allows students to identify space occupancy throughout the day and their uses (Fig. 6).

Figure 6: Uses of the space and occupancy throughout the day.



Results

After being inquired about the application of HCD to the project, students appreciate that it has allowed them to understand the characteristics and needs of the users and to take into account their diversity, which has a real impact on their approach to designing solutions.

The technique most valued by the students is the interview, followed by mapping, immersion, secondary research, and photo-journaling.

In this first edition of Aspasim, HCD, complemented by an inclusive approach, has positively impacted the project. It has allowed students to understand and empathise with residents and caregivers, putting space design to serve these needs. As issues to be improved, there is the need to include HCD in the design and evaluation phases to consolidate the impact of this approach on the final solutions and to encourage critical reflection on the entire process.

Conclusions

In the social design education cases described, the application of HCD had several positive implications: it allowed students to understand the broad context of the project, the nature of the crisis factors involved, and the users' characteristics, needs, and barriers. The emphasis on "human" allowed them to include emotional and cognitive factors beyond the purely functional ones. In addition, it allowed starting from a defined methodology. HCD enabled the generation of feasible and applicable design proposals in the short term.

However, taking into account the characteristics of social design projects, the experiences reported lead us to be cautious with several issues:

- HCD can lead to a vision based on standards which is not open to diversity. The act of "labelling" or modelling the users has to respect diversity as a core value. In social design projects, HCD should integrate an inclusive design approach (Clarkson et al., 2003).
- HCD is based on a hierarchical position between designer and user (Sanders, 2002), which must be considered and balanced with more participatory approaches in social design projects. Moreover, HCD has been widely used in commercial projects where the user *chooses* to use a product. In social design, the use of a service or a space does not always depend on a voluntary choice on the part of the users.
- In short projects, students only sometimes manage to define a coherent view of the process performed. It is optimal to work in the longer term, applying an evolutionary approach throughout different projects so that students can acquire knowledge that allows them to critically and autonomously use the methodology.

The application of HCD to social design education projects, therefore, necessarily has to go beyond HCD as we currently understand it. HCD has to broaden its range of vision, integrating (and not only complementing) inclusive design to avoid standardisation, allowing it to understand the diversity of users and its social and emotional dimensions (Forlano, 2017). Incorporating inclusive design methods and developing listening, observation, and analysis through narrative techniques becomes essential (Pujadas, 2022).

Last but not least, design as a field is increasingly aware of the need to overcome the anthropocentric perspective, which is causing suffering not only to users "on the margin" but also to other beings and the ecosystem. HCD needs to incorporate design approaches to consider the impact and implications of design in an interrelated world (Forlano, 2017; Thomas et al., 2017).

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Design Pedagogy in an Uncertain World: Sensible, Transdisciplinary, and Post-Human Approaches

Cecilia De Marinis, Jaron Rowan

Abstract *In a world marked by uncertainty and complexity, design plays a fundamental role in questioning the present and envisioning a more sustainable and equitable future.*
To train designers able to respond to contemporary challenges, we must question the conventional approach to design pedagogy, rethinking the tools, techniques, and aesthetics we have known and taught so far.
In pursuing new and transformative design pedagogies, we suggest possible perspectives that represent methodological and epistemological challenges to design pedagogy and contribute to understanding design as a field of practice and research that focuses on the world as it could be.
The first challenge is to implement a method of reflection-in-action, in a process of mutual nurturing between making, feeling, and thinking. A pedagogy based on a comprehensive vision that connects the experiential, social, and material aspects of design through experimentation and the process of trial/error, training students to be able to navigate the "swampy lowland" of the creative process (Shön, 1983).
The second is to apply a multidisciplinary and transversal approach to design practice, connecting different fields such as politics, architecture, anthropology, art, digital fabrication, and ecology, offering a non-hierarchical framework for action.
The third and most complex challenge is to permeate design pedagogy with posthuman thinking, stimulating the reflection around concepts of situated knowledge, radical care, and the interdependence between human and non-human entities, challenging the dominant and undefeatable position of the human being and its relationships with the environment, suggesting new ways of knowing and making sense of the world.
The paper will discuss these pedagogical challenges through the example of the Master of Design Research, conducted at BAU School of Arts and Design since 2017, providing the context of reference to relate the insights of trying to push the boundaries of design pedagogy and "staying with the trouble" (Haraway, 2016).

Author keywords *design pedagogy; conscious design; transdisciplinary; posthuman thinking; speculative design*

Introduction: Rethinking Design Pedagogy

In a contemporary landscape defined by the intricacies and uncertainties of a rapidly evolving world, the role of design takes on a fundamental significance in questioning the present and envisioning alternative futures, contributing to transformations and processes, and offering new perspectives to look at reality.

In order to foster designers able to respond to the multifaceted challenges of the present era, it is imperative that we reevaluate and challenge the conventional approaches to design pedagogy. This entails a comprehensive rethinking of the tools, techniques, and aesthetics that we have known and taught so far.

The fundamental change resides in the ability of design education to train conscious designers equipped with the tools to discern the evolving societal, technological, and environmental landscape, and the capacity to think critically and affirmatively. That is, understanding complexity but also being able to imagine and open alternatives. Developing the competencies to prefigure new worlds revolves around the capacity of design education to provide students with those tools and offer them space to explore, experiment, make mistakes, and discover.

In our quest for novel and transformative design pedagogies, we advocate for a range of potential perspectives that present both methodological and epistemological challenges to conventional design education and contribute to understanding design as a field of practice and research that focuses on the world as it could be.

In this article, we will discuss three challenges to design education: the implementation and expansion of the method of reflection-in-action, fostering a reciprocal relationship between making, feeling and thinking; the generation of knowledge alliances, transcending disciplines and fields of action and navigating unprecedented forms of collaboration; the integration of posthuman thinking, urging to question traditional epistemologies and explore ideas such as situated knowledge, radical care, and the intricate interconnection between human and non-human entities, making space for new ways of knowing and making sense of the world.

The presented pedagogical challenges are also discussed through the examples of two final master thesis projects from the Master of Design Research, conducted at BAU College of Arts and Design. Those examples show how the pedagogical challenges are embodied in design projects that question conventional ways of looking at reality, envisioning new material relationships with the world.

From Reflection to 'Diffraction' in Action

Taking inspiration from Manning and Massumi, we conceive design as a mode of *thinking in action*, an interconnected process where knowledge is generated *through* the process of making, dismantling the thinking/making dichotomy (Manning &

Massumi, 2014). This form of cognition inhabits the space between thought and action, theory and practice, a threshold where boundaries blend and transitions are not linear. An intermediate space between *Techne* and *Episteme*, that we trace to the ancient Greek concept of *Phronesis*, which represents practical knowledge generated in a concrete and intricate context essential for making decisions. *Phronesis* embodies a type of contextual knowledge acquired through hands-on experience and is fundamentally practice and action-oriented.

This approach to design as a reflective practice has been initiated by Donald Schön who transferred the concept of *reflection in action* from the methodological to the epistemological realm. In his work, The Reflective Practitioner (1983), Schön proposes an alternative epistemology of practice that interprets design as a "*reflective conversation with the situation*". The author suggests that reflection in practice often begins when a routine action produces an unexpected outcome, that surprise gets our attention and drives us to a process of reflection:

> "We reflect on action, thinking back on what we have done in order to discover how our knowing-in-action may have contributed to an unexpected outcome" (Schön, 1983:26).

This notion of *reflection in action* underscores a symbiotic relationship between making, feeling, and thinking. It advocates for a pedagogical approach that integrates the experiential, social, and material aspects of design through hands-on experimentation and trial-and-error processes, training students to be able to navigate the "swampy lowland" of the creative process (Shön, 1983). Navigating the "swampy lowland" means engaging with messy but crucial issues, driven by experience and intuition. Grand (2012, p.156) endorses and reinforces the importance of remaining messy and controversial to make space for new and unconventional ideas to be generated.

Similarly, Ranuph Glanville defines design as a process of exploration into the unknown: "Design is like wandering in the countryside with some vague idea of going somewhere while not really knowing exactly where you are going, making repeated decisions over which path to follow [.]" (Glanville, 2016, p. 154). An invitation to embrace the process of getting lost because in getting lost we might find something we won't expect.

This process of productive disorientation as a method of inquiry requires designers (and students) to learn how to inhabit uncertainty and ambiguity in the process.

As Marta Camps and Jaron Rowan suggest, the invitation is not to observe from the outside but rather to enter, to position oneself among things, to get one's hands muddy, decentralise oneself to enter into a relational dynamic (2021, p. 66). Design

is, therefore, understood as an open practice, capable of listening and attention, embracing complexity and contradiction.

Embracing such forms of knowledge production and embedding these approaches into our teaching methods pose an interesting challenge for design educators. In this pedagogical context, the role of educators is complex and delicate. As Marta Camps suggests, we can understand design pedagogy as a practice of embracing uncertainty and not-knowing in the process of teaching, accompanying students in their processes of discovery rather than merely transferring knowledge to them (Camps, 2021, p. 99). Pushing the boundaries of design education, Camps proposes a pedagogy of *knowledge in action* as a shift in the curriculum aiming not to strictly adhere to predefined learning objectives, but to be responsive to the possibilities sparked by acts of openness within each individual. Thus, this is an educational approach striving to attune to growth and receptiveness, requiring us to put aside the rigid demands of the disciplinary curriculum, despite the inherent limitations and contradictions (Camps, 2021, p. 105).

Knowledge in action offers educators a space to align thoughts, feelings, and actions, an opportunity to inhabit possibilities and potentials and embrace open educational spaces that aim to discover and unveil knowledge through unplanned actions. With a requirement for a certain pedagogical discomfort, the model proposes practices that deviate from disciplinary parameters and seek a more situated experimentation, where judgment is suspended in favour of new and unexpected adventures (2021, p. 98).

Such a pedagogical model is rooted in experiential learning, openness, and the intertwined relationship between thinking and making. In such an evironment, educators themselves are called to learn how to navigate the uncertainty and ambiguity of the process. Following this intention to push the boundaries of design pedagogy, we suggest expanding the established and recognised model of *reflection in action* towards one of *diffraction in action*, urging an epistemic movement from reflection to diffraction.

Reflection comes from the Latin '*reflectere*' relating to the idea of folding back or folding again, while diffraction comes from the Latin '*diffratio*' relating to something that breaks or separates. While reflection relates to a movement towards the 'same' or the inside, diffraction connects with a sense of openness and relationality, of being affected by external encounters.

Haraway suggests an understanding of diffraction as a metaphor to overcome the traditional reflective form of thinking, considering diffraction as a "more subtle vision" (2004/1992, p. 70)

The author explains how "*Diffraction does not produce 'the same' displaced, as reflection and refraction do. Diffraction is a mapping of interference, not of replication, reflection, or reproduction*" (2004/1992, p. 70). Thinking diffractively means stepping out of the con-

ventional, allowing us to acknowledge the differences and interferences that exist, and implying a critical and responsible engagement with the world.

The metaphor of diffraction as a mode of thinking allows us to expand the process of reflection in action towards concepts of interconnection, interference, and affectedness.

Knowledge alliances

Contemporary design and the multiple practices it includes operates in a complex intersection. It needs to be able to navigate and articulate market interests and social needs. Academic requirements and political agendas. Aesthetic challenges and ethical concerns. In this sense, design crosses many disciplines and fields. Design pedagogy must incorporate this complexity and be able to blend theoretical concerns with political awareness. Technical skills with poetic views. It needs to encourage radical forms of imagination with attention to detail and the importance of the context.

All this happens in an ever-changing society with challenges and complex problems arising. We are living in an unprecedented historical moment. As a species deeply entangled in the world we face a series of problems and challenges completely unprecedented in scope, magnitude and complexity. Mass extinction of species, forced migrations, resource depletion, pollution of rivers and waters, unequal concentration of wealth, loss of biodiversity, political polarization, pervasiveness of microplastics, growth of fascism and extremism, propagation of new forms of mental illness and unrest, extreme climate events, ocean acidification, precariousness of work and life, just to name some of the most notable. Many of these problems seem to be closely linked and related to each other, but even so, we face them separately. We have inherited a set of world views and epistemic categories that seem inadequate to face the current moment.

In that sense, the current situation requires us to establish alliances of knowledge and practices. Transcend the discipline to delve into innovative and unprecedented forms of cooperation. Ways of knowing that go beyond rationality, criticism or aesthetics, that is the three modern epistemic categories. We need to develop ways of doing capable of assuming complexity through inventiveness and creativity. The neoliberal emphasis on the autonomy of the subject, the prominence of the idea of the person as being independent of the environment, and the gradual erosion of forms of political organisation to favour narratives centred on the self and the individual identity of the subjects, have contributed to particularise many of our shared problems. Massive issues can only be dealt with on a micro level. Every problem seems to happen on a personal scale. With this, larger frames of reference, and the ability to understand the systematicity of certain struggles or the structurality of the inequalities that we are facing are lost. In this context, it is essential to reflect on

new ways of understanding and dealing with current troubles and challenges and the role that design can have in opening up these complex entanglements of economic, social, personal and material elements. We need to articulate these problems with broader contexts, where we can see and understand the interconnections and structural causes that underlie them.

Materializing the problems by taking into account the structurality of power relations, the institutional frameworks that reproduce them, and the infrastructure designs and production models on which they are based, are some necessary steps to overcome the limitation of focusing only on particular and individual effects and address the full range and complexity of the problems that unfold in front of us.

Design in this sense can be understood as a medium (Easterling 2021) or part of a wider relational practice. A practice that is not focused on problem-solving but also concentrated on issue-raising. In her book "Staying with the Trouble: Making Kin in the Chthulucene", Donna Haraway urges us not to jump to conclusions hastily. She invites us to sustain the complexity of the problems and categories inherited from modernity so as not to end up ratifying or idealising visions or categories that, instead of undoing, Haraway invites us to mix up, to interweave. For the author,

> "continuing with the problem requires learning to be truly present, not as an axis that disappears between horrible or Edenic pasts and apocalyptic or salvation futures, but as mortal bugs intertwined in myriads of unfinished configurations of places, times, materials, meanings" (Haraway, 2016, p. 20).

To do this, she recommends that we learn to make new relatives, rare relatives that link us to a heterogeneous and complex biological world. Establish links with those non-humans that until now we had silenced. Since *"nothing is connected to everything, everything is connected to something"* (Haraway, 2016:61), the author proposes developing forms of tentacular thinking. Weaving spider webs. Creating networks of meaning capable of articulating what we had divided. To do this, she proposes a science that does not start from human exceptionalism and utilitarian individualism, that is, from the star subjectivity of European modernity, but instead proposes learning to think with excluded others. With the monsters and bugs from which the gift of speech has been removed. For her part, in a similar vein, Isabelle Stengers invites us to articulate an ecology of knowledge (2005) capable of addressing the multiple challenges that occur in different ecologies and, in turn, to look for ambassadors and clowns capable of establishing links and highlighting the absurdities of certain logics and power relations that keep ecologies separate.

Design needs to be able to entangle worlds. Combine ideas with materials. Articulate social, aesthetic and economic concerns.

Integrating Post-human Thinking

Perhaps the most complex challenge for design pedagogy is to embrace and materialise posthuman thinking. This entails a paradigm shift that challenges the conventional understanding of humans as separate from technology and nature and encourages contemplating concepts of situated knowledge, care and the intricate interconnections between human and non-human entities. It involves challenging the prevailing anthropocentrism and rethinking human-non-human relationships, presenting new epistemological pathways to comprehend and engage with the world (Braidotti, 2013). As Rowan and Camps have argued before, we can find different spaces for debate in contemporary design in which the need to confront some of the maladies from modernity and humanism is being addressed, as they write,

> "calls and ideas surrounding the need to decolonize design and redress modernist ideas and aesthetics that have been naturalized in design practices (Prado & Oliveira, p. 2014). On this line of work, we can see the contributions of Arturo Escobar who under the notion of pluriversal design has opened a debate around the need to incorporate non-European perspectives and aesthetics in design (Escobar, p. 2018). [...] These different debates and approaches are also finding their space in the academic context as conversations around the need to think and implement what has been called "Pluriversal Design Education" (Noel, p. 2020), or pedagogical experiments in which decolonial perspectives and non-western epistemologies are taken into account (Mortensen & Tavares 2021)" (Rowan & Camps, 2022, p. 567).

Although the task is not easy or exempt from contradictions, we can see specific practices where these approaches are being materialised. In his recent book, "Designing for Interdependence", Marti Ávila (2022) explores ways in which we can design for more-than-human worlds. Introducing animals and plants and giving them agency, his projects focus on showing how different forms of life are connected in what he describes as webs of interdependence. Interdependence, as a condition of everything that is alive, makes it evident how the concept of care and the practices it entails are fundamental elements. They are not only essential to sustain and maintain relationships, and thus the continuity of the system, but essential also as a way to approach reality. Care becomes a tool to observe, make sense of, and navigate reality, and consequently, to question the status quo and imagine alternative worlds.

A radical idea of care that envisions an integration of human and non-human entities within the realm of care, transcending human-centred perspectives and reimagining care beyond human interaction (Puig de la Bellacasa, 2017). An invitation to reflect on the impact of our actions—including design actions—not only on

the human species but also the others and all the living systems, and to rethink the concept of well-being in relation to ecological limitations for maintenance, repair, and possibilities of prosperity. In a recent paper, Hee-Jeong Choi, Braybrooke and Forlano argue for "*participatory engagements in the form of more-than-human co-creation*" (2023), bringing posthumanist ideas to urban design.

Another interesting field of practice comes in the shape of bio-design and design with living organisms, as advocated by Keune (2021) or found in discussions on how to go beyond human-centred design presented by Giaccardi & Redstrom (2020). In this line, Tim Cowlishaw's research on digital wastes and his proposal to think in more-than-human timescales is certainly interesting, as well as his design probes and epistemic objects with which he carries out his research. By introducing debates surrounding utility and working through different time frames, Cowlishaw helps us to imagine non-human-centred design practices. As he argues,

> "[t]he argument for a move away from the primacy of use and user-centeredness seen in a variety of work dealing with the question of design for more-than-human worlds is of particular importance to design for digital media, not just for the historic importance granted to such perspectives in digital design, but also because such perspectives do not account for the materiality of digital infrastructure, its entanglements in the world, and its mutually- dependent ontological relationship with the objects of digital design themselves, a relationship which is deeply dependent on ongoing relatings of care and maintenance" (Cowlishaw, 2022, p. 30).

Most of these projects and practices have a speculative element to them, but help us to imagine the way forward in the integration of posthumanism in specific design practices.

Two Students' Projects as Material References

To materialise the presented pedagogical challenges in the context of design education, we draw on the experiences and insights gained as educators in the Master of Design Research program at BAU College of Arts and Design, which stands as a contextual example, illustrating the ongoing efforts to push the boundaries of design pedagogy.

The program, initiated in 2017, embraces a multidisciplinary, integral, and broad understanding of design, intended as a mode of thinking in action, with a social and political role.

Through a series of diverse and multidisciplinary subjects, the master provides students with tools, strategies and methods to do research in design and gener-

ate new knowledge through the practice of design, training them as designers/researchers able to understand the complexity of the world, question the status quo, and envision alternative realities.

This approach to design pedagogy invites students to rethink their own understanding of the world and let new questions emerge from their explorations rather than seeking answers. It is an approach dedicated to developing students' critical and speculative thinking and training designers who do not just respond to existing problems but rather, doubt, interrogate, and question. Designers who are capable of sustaining contradiction and uncertainty, not as elements that block and limit the design process but rather as drivers for alternative ways of looking at reality. Within this approach, posthuman theories are embedded as a possible framework for speculation and exploration.

Materialisation is another key aspect of the pedagogy of the master. Throughout the program, students are invited to materialise their ideas positioning themselves at the edge between theory and practice. The challenge of inhabiting such space in-between is faced in each and every subject, where students are invited to intertwine their theoretical research based on different sources, such as readings, projects, movies, etc., with their practical research based on experimentation, manipulation, and transformation. The two are inseparable and students have to demonstrate their ability to explain the contexts, references, and processes of their design research projects.

In the Final Master's Thesis students are invited to apply the knowledge, methods, and processes learned throughout the different subjects, to their specific topic of interest. In this pedagogical space, they dive deep into their urges and concerns and, borrowing from all disciplines and research methods touched upon in the program, they are able to generate their own design research methods and processes. This individual research project is the space where students explore, experiment, and test, developing their specific approach to design and demonstrating their ability to do research through the practice of design as well as question reality through design.

We present here two final master thesis projects that exemplify the fascinations and preoccupations discussed in this paper. The projects engage with post-human thinking, matter and theory, social and political issues, questioning our position in this world as human beings and speculating on new relations and connections with other living beings. They formulate new and unconventional questions rather than finding fixed solutions to problems.

The first project, called *"Tierra bastarda. Devenir en el umbral"* (Bastard soil. Becoming in the threshold) by student Marina Muñoz, is an exploration of concepts such as limbos, becoming, and transition through material research with raw clay. The research focuses on the process of co-creating with matter, involving time, movement, and transformation.

In this project, clay is intended as a matter of transition, a space for exploration that exceeds fixed categories and classifications. The project is a claim to the importance of limbos as tangible and material spaces, complete and incomplete at the same time, in a condition of constant transition. Referring to Braidotti (1994), the student interprets clay as a nomadic subject: an entity that transforms, reinvents itself, and challenges the boundaries of established conditions and disciplines.

The material exploration has been developed in the territory around Badalona (Barcelona, Spain) where the student collected different types of soil and worked with her hands to accompany matter through the slow process of material transformation from clay into ceramics, letting the natural environment be part of the process.

The process of reflection-in-action, which we presented earlier in the paper, is visible in this material research where the student learns from the dialogue with the material and through the action of manipulating and transforming matter, combining ideas with materials.

Through the practice of pottery making, the experiential research delves into concepts of entanglements and *sympoiesis* (Haraway, 2016), transformation and hybridity.

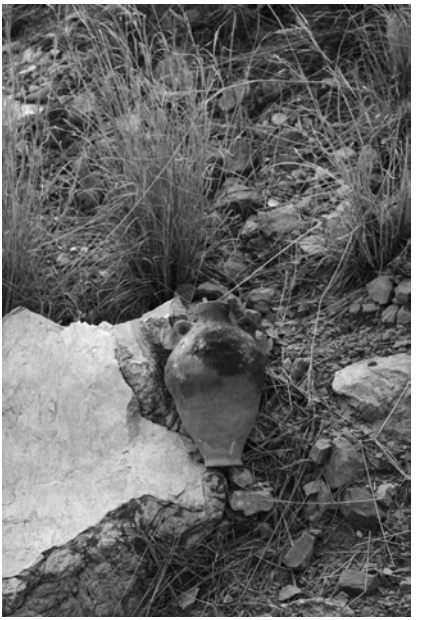
The material outcomes of the research are a series of clay artefacts that embed all the steps of the process of co-creation, planned and unplanned. Some artefacts generated processes of germination and some others showed traces of the firing process. Those artefacts are containers that challenge the boundaries between mud and ceramics.

This project represents an outstanding result within the context of a pedagogical approach based on integrating experiential, social and material aspects through processes that intertwine making, feeling, and thinking.

The second project, called "*Meterse en un jardin. Plantas de plastico para repensar los cuidados*" (Getting oneself into a mess/garden. Plastic plants to rethink care) by student Blanca Pia Fernandez, aims to prompt a reflection, raise questions, and explore pathways regarding the relationships, connections, and coexistence between humans and plastic, considering it as a ubiquitous material that transcends us through time.

The project starts by questioning the conventional position of plastic in our society as a material of little value, considering it to be of poor quality, disposable, and cheap. This contradicts the intrinsic characteristics of the material itself, such as its longevity, versatility, and the high environmental cost of its exploitation.

Figures 1 + 2: Project: "Tierra bastarda. Devenir en el umbral". 2023. Credits: Marina Muñoz and Rubén Aznar.



By proposing an alternative to the conventional way we understand plastic, the project goes beyond solution-oriented processes of plastic circularity and reuse, and places care at the centre, discovering through matter and repairing from and with it, establishing intimacy bonds to generate a shift in habits, adopting new perspectives to construct a negotiation space that offers the possibility to rethink the way we inhabit the world.

The exploration has been both material and theoretical, always keeping the tension between the two. Working with synthetic and plastic materials to observe their relationship with time, the student questioned the natural-artificial dichotomy and proposed a change in the relationship between humans and plastic to generate a bond of care and intimacy that transcends time, highlighting the characteristics associated with this material: its omnipresence, its banality, and longevity.

As previously explained in this paper, integrating posthuman thinking in design pedagogy means moving away from an anthropocentric vision and rethinking human-non-human relationships, offering new ways to comprehend and engage with the world.

Figure 3: Project: "Meterse en un jardin. Plantas de plastico para repensar los cuidados". 2022. Credits: Blanca Pia Fernandez.

The material outcome of this research is the design of a plastic garden embedding those ideas and representing a space that aims not only to question the status quo but also to establish a new domestic and caring bond between humans and plastic, through alternative and uncommon forms of plastic.

Through speculation and imagination, the project helps us envision the way forward to incorporate posthuman thinking into design practice.

Conclusions

The presented design projects materialise the challenges and possibilities we propose to rethink design education. They present alternative epistemologies and establish new forms of relationships with non-human worlds, offering new lenses to look at reality, challenging the human-centric perspective, and posing questions that open new pathways to be undertaken. They are the outcome of design processes able to navigate uncertainty and ambiguity, able to relate with matter and thought, generate alliances and interferences between fields of knowledge, to intertwine making, feeling, and thinking. They represent an understanding of design as a practice crossed by multiple forces, conscious and attentive, capable of embracing complexity and contradiction.

The pedagogical perspectives presented in this paper and exemplified through those examples invite design educators to a methodological and epistemological shift in design education, towards a design education that is able to embrace uncertainty and contradiction, and to navigate the complex and intricate interconnections among living beings and understand the responsibility and affordance of the design actions and processes.

In trying to push the boundaries of design pedagogy, we as educators have to learn how to stay with the trouble (Haraway, 2016) and accompany students in their processes of discovery.

As we conclude this exploration, we recognise that rethinking design pedagogy is an ongoing journey and the proposed shifts and perspectives are not exhaustive but indicative of the paradigm shifts needed to adapt design education to an ever-changing and uncertain world.

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Chapter 5 / PhD + MA Track

This Chapter connects to the topic of 'Crisis and Education' and further highlights the importance of education in approaching crises and complexity in design. The way this topic is embedded into the design curriculum of various institutions, shows its importance in our contemporary practice both in research and in commercial design work.

During the conference a separate track was dedicated to PhD and MA students where early doctoral research as well as research corresponding with graduate and undergraduate student design projects were welcome for submission. In this chapter, short abstracts complete with visuals are presented, diving into the topic of practice-based design approaches. These submissions shine a light on how the context of design education can enhance our understanding of crises in a meaningful way, demonstrating curriculum elements, tools and experimental concepts as good practices on how to approach complex or wicked problems in education through design.

PhD and MA student submissions were presented in person at the conference in Pecha Kucha format presentations. The call invited presentations that address the conference theme in creative and thought-provoking ways and that offer new insights and ideas for how design can respond to and shape our understanding of crises as well as how designers are working with others to usher in or contribute to change in terms of crisis resolution. Research or project presentations encompassed case studies, empirical studies, design projects, or experimental course formats, both through practical and speculative approaches.

How Makerspace in School Helps Develop NAT2020 Core Competencies

Anna Barsy, Sára Fleischer

Abstract *As educators from Mozgásjavító School, a K12 Special Education School in Budapest, Hungary, we are integrating maker pedagogy in alignment with the National Core Curriculum 2020 (NAT2020) into the everyday teaching routine of a public school. Our focus centers on the establishment and operation of the Robotics Lab, a dedicated makerspace facilitating both curricular and extracurricular activities, thereby achieving academic success and fostering 21st-century skills.*

The well-crafted guidelines of NAT2020 encapsulate advanced educational principles, such as 21st Century Learning Design, future workforce skills, entrepreneurial competencies, promotion of critical thinking, and effective utilization of digital tools, which conflict with the inflexible and outdated teaching preferences of the other parts of the document. Despite these challenges, particularly in the realm of inquiry-based science education, the extended time frame required for an educational project development, and resource and expertise requirements, our projects serve as evidence of the effectiveness of project pedagogy to fulfill NAT2020 requirements.

Addressing these challenges, our makerspace leverages teamwork facilitated by trained staff in digital education, collaborating with subjects and special education teachers. The Robotics Lab emerges as a pivotal hub for product development, integrating STEM education and Social and Emotional Learning (SEL).

Engaging students in collaborative projects, such as programming video games based on compulsory readings and creating 3D printed objects like flint tools, showcases the acquisition of essential learning, communication skills and creativity. Personal projects, like crafting an NFC stamp-based card for lost belongings, exemplify the application of design thinking and innovative planning. In a STEAM lesson using combinatorics, students successfully built a paper piano, underscoring the effectiveness of our approach, which not only enhances digital competencies, problem-solving and mathematical and critical thinking skills but also aligns with the guidelines outlined in the NAT2020.

This way, our makerspace becomes a platform for skill development, confidence-building for social interactions, and vocational exploration, fostering an inclusive environment. Also, en-

gaging students in collaborative efforts enhances essential workplace skills while maintaining a focus on the expected academic progress.
Recognizing these achievements, the school's leadership plays a pivotal role in creating an environment conducive to providing avenues for students, including those with different disabilities, to explore the Robotics Lab through maker pedagogy.
In conclusion, Mozgásjavító School showcases the feasibility of aligning with NAT2020 while breaking through framework barriers. We believe this experience encourages educators to embrace maker pedagogy as a universal approach, creating inclusive environments that nurture creativity and skills for all students.

Description of pictures

Figure 1: Regular curricular lesson in the Robotics Lab.

Figure 2: According to the story, John the Valiant, the famous Hungarian hero, woos his beloved Iluska, while the guarded flock scatters. Created by a 5th-grade student using Arcade MakeCode programming.

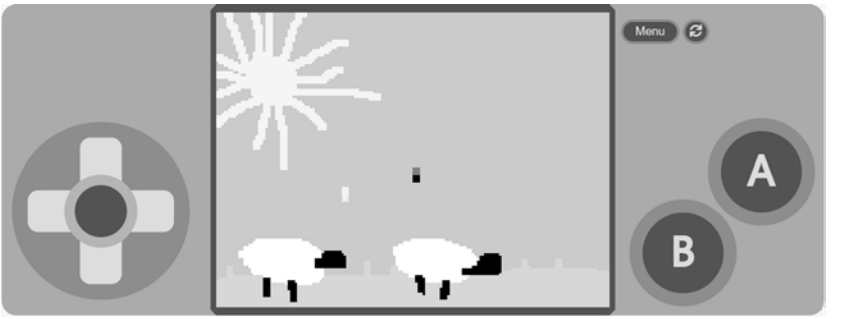

Figure 3: Ricsi, an 8th-grade student, is preparing a cookie stamp for the lower-grade students' activity, designed with the school logo in Tinkercad and independently prepared for 3D printing. Based on his own idea, the tool has several handle versions to ensure that children with different abilities can confidently grip the tool.

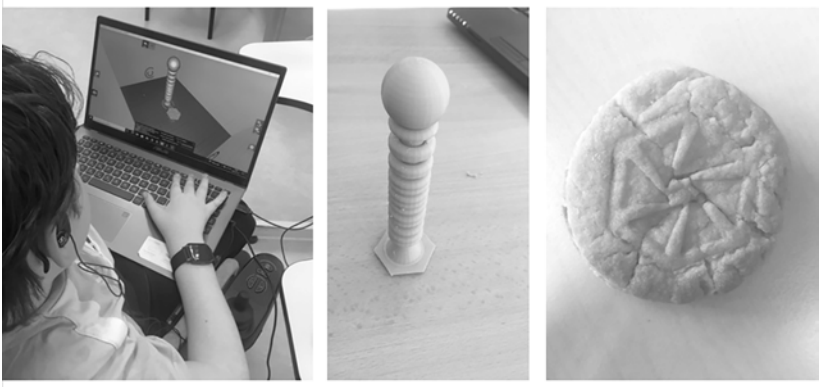

Figure 4: Bálint, a high school student, assists during the theme week in printing the first 3D designs of the younger students. He prepares the g-code files in a way that allows the younger ones to see and ask questions about the process.

Sensory Methods towards More-than-Human Placemaking – A Case Study of Traditional Floodplain Farming at the Tisza River

Zsófia Szonja Illés

Abstract *In the context of the climate crises, it becomes ever more urgent for designers to reconsider their practices and move beyond human-centered notions of land use. Drawing inspiration from traditional ecological practices can provide a potential avenue for reimagining land use and placemaking design. The research explores methods and approaches that facilitate the inclusion of diverse forms of knowledge that have been mostly absent in land research and land use decision-making. The case study, situated in the flood plains of the Middle-Tisza, proposes sensory ethnographic, artistic and design methods capable of capturing and describing the tacit ecological knowledge of floodplain farmers through means beyond spoken or written words.*

As a consequence of river regulations implemented during the 19th century, the Tisza River has been reduced to less than half its original length. The once 39,000 km2 of flood meadows, that served as natural water storage, have been diminished to only 2300 km2 (Figure 1). The drastic transformation of a once wild 'water country' has brought about species and habitat loss and the desiccation and salinization of extensive areas. While the reversal of river regulations is unattainable, valuable insights can be learned from the practices of floodplain farmers who have always collaborated with water and flooding.

Despite the scientifically proven value of traditional ecological practices, individuals with such tacit expertise are still rarely included in decision-making processes concerning land use. Ethnobiologists and ecologists increasingly agree that traditional ecological knowledge and its practices contribute to biodiversity and to a better understanding of complex environmental issues (Demeter et al., 2021). However, much of the knowledge that flood-meadow farmers possess lives in tacit and embodied practices. Consequently, traditional consultation methods may struggle to involve them in conventional ways, or even consider them in their expert capacity.

Drawing upon the researcher's artistic practice, this rich and often tacit ethnographic data was captured through sound and video recording (conducted during walk-along interviews; Figure 2). The video documentation of tacit practices and sound recordings of the flood landscape contribute to a sensory landscape installation to disseminate the outcomes of the research, that could otherwise not be easily expressed in spoken or written words (Pink, 2015).

This sensory landscape installation (Figure 3) also creates a space for critical reflection and engagement.
The case study underscores the importance of an interdisciplinary sensory art, media, and ethnographic approach in capturing, describing, and disseminating tacit knowledge. This sensory approach can help reveal insights beyond verbal communication and foster a multidimensional understanding of the human- environment relationship.

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Figure 1: A 19th century map of the Tisza before river regulations, property of a research participant (Photo: Illés, 2020).

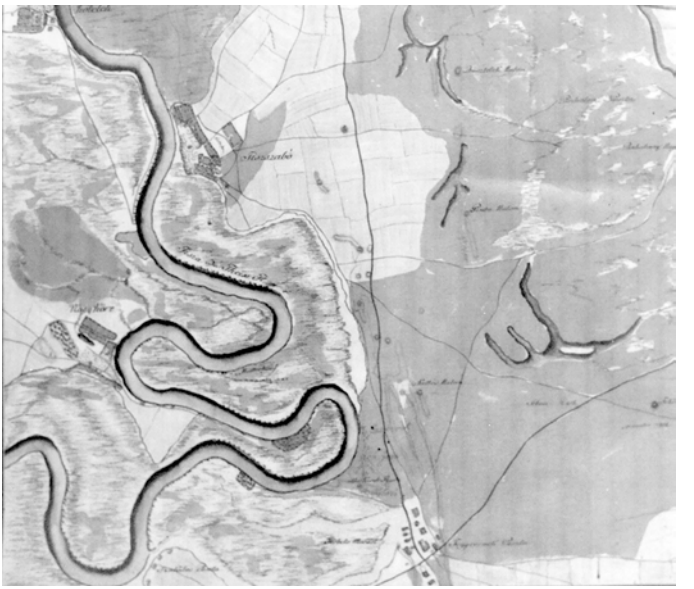
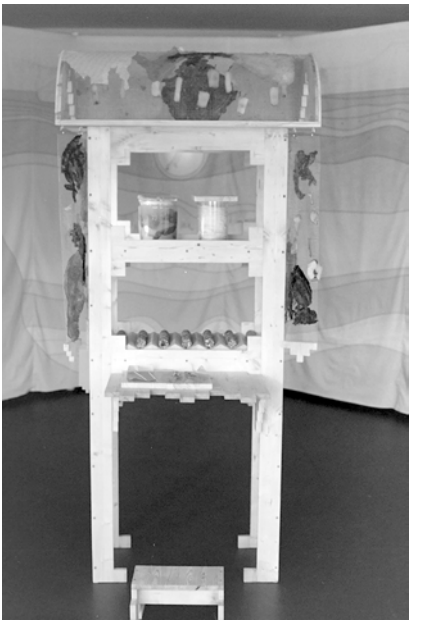


Figure 2: A flood-meadow farmer, explaining the benefit of flood forestry in managing invasive shrub species such as false indigo-bush (Amorpha fruticosa) (Photo: Illés, 2021).

Figure 3: 'Fermented Futures', landscape installation at TRAFÓ Budapest, with an edible Tisza flood landscape (Photo: Illés, 2023).

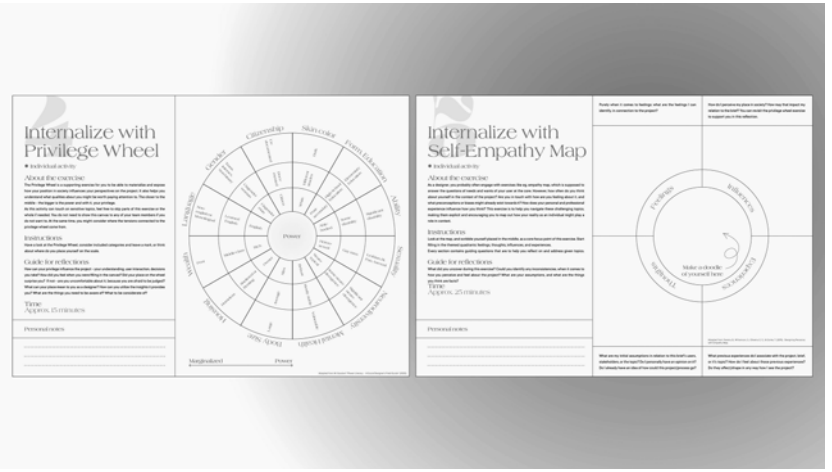


Intention-setting with Reflexivity and Introspection: a Driving Force of More Ethical Design Practice

Réka Sára Mezei, Julia Maria Podobas

Abstract *In today's world, ethical considerations are often made retrospectively: faulty and biased designs promote outdated ideas and contribute to socioeconomic, racial, and gender-based discrimination. Ultimately, they are unconsciously fostering unjust power dynamics.*
At Aalborg University, our Master's thesis in Service Systems Design dives into the core of design practice and how it might become more conscious and ethical for a more sustainable future. It tackles questions such as:
How can designers adopt a more intentional and responsible approach?
How can a virtue-ethics-driven praxis that utilises introspection, reflexivity, and debiasing techniques contribute to a more consciously driven design process?
Our approach to answering these questions was led by the recognition that, in the design world, ethics are often perceived as overwhelming and confusing. What is more, the design process is saturated by the methods and tools available to be utilised in the design process claiming to support a more ethical process and output. Furthermore, the reduction of ethics in design to methods and tools, we argue, can fog up identifying harmful design decisions; their implementation needs to be more systematic and overarching the whole design process, with emphasis on the early phase, where often ethical principles are formed.
As service designers, we took action by inviting experts and practitioners in the field to discuss personal and professional responsibility and how ethics are practiced to address pressing issues of our time. With the support of their insights, we developed the "Intention-Setting Workshop," utilising existing tools and placing them in a system to support ethical decision-making from the beginning of the design process. This way, we aim to support designers in becoming more intentional about the ethics of their practice. The workshop supports personal bias identification, with an emphasis on reflexive and introspective practices that contribute to a virtue ethics-driven mindset, which, we believe, is a path towards an ethical and more-than-human-centred design practice. Through this output, we hope to encourage designers to have a systematic understanding of applying tools and methods in their practice and ultimately to start tracing and uncovering their biases to lead more ethically driven processes that promote praxis rooted in reflexivity, introspection, and debiasing.

Figure 1: Templates for "Intention-Setting Workshop. Source: Authors.



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Design as a therapy: Using Design Methods to Support Processing Trauma of Forced Migration and Loss of Place

Erzsébet Hosszu

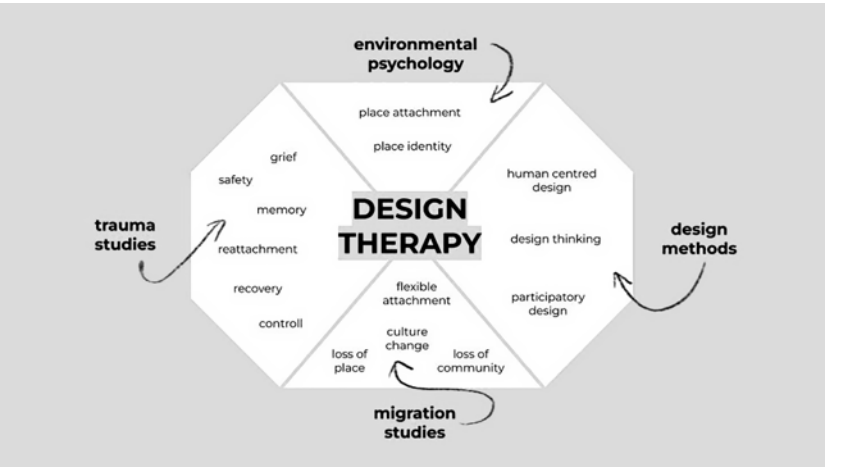
Abstract *Asylum seekers experience a strong trauma of forced migration caused by the push factors (war, torture or natural disaster), the multiple loss (home, goods, community, family, existence) and the confusion over cultural differences. The purpose of this paper is to find connections between migration studies (1), trauma studies (2) environmental psychology (3) and design methods (4) in order to develop the base methodology of "design therapy" and through that a new approach to support processing the trauma caused by forced migration. Over the past 10 years, the author has facilitated countless creative workshops and participatory design projects with young refugees, immigrants and their disadvantaged Hungarian peers. She corroborates her field experiences with the literature and in-depth interview research.*

The paper presents the psychological process of migration with an extra focus on aspects of forced migration, and then highlights the main milestones and goals of the stages of processing trauma. In the second part, the paper introduces the practical aspects of place attachment and also the process of design methodologies (with the focus of Design Thinking and Human Centered Design). Third, the author compares the needs and challenges of the recovery stages of trauma with the process and outcomes of design methodologies, illustrated with examples of her 10-year field experience. Based on theoretical research, in-depth interviews and field experiences, the paper states that design methods can be successfully used as a complementary treatment in all three stages of processing trauma (creating security, restoring memory and grieving the losses, reconnecting to the present), because (1) trauma takes away the sense of control from the victim, while design process encourages participants to take initiative, implement plans, and make decisions alone; (2) flashbacks of traumatic memories keep the victim in the past, while working in the design process makes participants focus on the present; (3) trauma creates helplessness while design process calls for action; (4) traumatic events affect the most basic human relationships, breaking family, friendship, love and community ties, while the design process helps developing cooperative skills in the frame of teamwork.

This paper is part of a practice-based doctoral research, where the purpose is to understand how architectural and design methods can support the process of place attachment. From the results,

a design therapy toolkit will be created, which can support processing the trauma of loss of home by developing place attachment.

Figure 1: Design Therapy method map. Source: Author.



‘Acerba Diaspora’: the Becoming Identity of New Generations

Kseniia Obukhova

Abstract *Globalisation, political and social instability, and mass migrations are the phenomena that shape modern society and expose it to an unprecedented diversity of worldviews, cultural backgrounds, and languages. The research project was conducted in Bozen-Bolzano, South Tyrol, a border area filled with cultural tensions, where a net separation between the diverse ethnolinguistic groups can be felt because of the complex historical events.*

‘Acerba Diaspora’ claims that new generations, children of persons with migration backgrounds, could become protagonists in shaping the fluid collective identities that represent contemporary societies. The project’s theoretical framework is based on ‘diasporic thinking’, an approach that shifts focus from a fixed notion of identity to a dynamic one and recognises the mutual influence of cultures and experiences.

Over 11 months, a collaboration with experts from the fields of education, migration, and design and a partnership with three local high schools were initiated to analyse how new generations could become protagonists in shaping the cultural identity of Bozen-Bolzano. The employment of a PAR method and the implementation of participatory design research tools, such as workshops, probes, boundary objects, guided discussions, and awareness campaigns, helped explore young people’s concrete needs, facilitate conversations between teenagers, school personnel, and families, and further activate an open and inclusive discourse around the ’new European identity’, where everyone can feel represented.

‘Acerba Diaspora’ challenges the idea of the “exceptionalism” of European culture and highlights the complexity of modern identities. It explores the role of new generations in advocating common values of civic conviviality and encourages a more nuanced understanding of the social and cultural fabric of today’s societies by promoting a sense of belonging among all community members, including those with migration backgrounds.

Figure 1: Cover of the thesis project. (Photo: Kseniia Obukhova).

Figure 2: Two pages of the thesis project. (Photo: Kseniia Obukhova).

Chapter 6 / Activation Day and Workshop Results

In order to create an opportunity to present the results to scholars and conference visitors, on the first day of the Conference several field-based workshops were organized in collaboration with Corvinus Science Shop and selected Budapest-based NGOs. Preceded by several months of preparation, the local NGOs were invited based on the meaningful and impactful work they do and its relevance to the conference themes. Three organizations were invited to present a challenge that they currently face in a case study format: Clean Air Working Group, which focuses on climate activism in an urban context; Migration Aid, which is currently engaged in helping refugees mainly fleeing the Ukrainian war, focusing primarily on the education of children; and Shelter Foundation, which deals with the housing crisis and homelessness in Budapest. With the participation of other NGOs, experts, students, and professionals, they engaged in one-day workshops where they attempted to create design-based answers through a facilitated design thinking process. The purpose of the workshop was to collaboratively explore real-world challenges from diverse perspectives, with the overarching goal of charting a path forward. This endeavor seeked to provide valuable insights not only to the specific organization at hand but also to other NGOs and professionals operating within the same sphere.

WORKSHOP 1: LEVEGŐ MUNKACSOPORT (CLEAN AIR WORKING GROUP)

CHALLENGE

How might we increase youth engagement towards cleaner air in cities through social design methods?

DESCRIPTION

The workshop focused on the topic of urban youth engagement in climate equity. The case study provided by Levegő Munkacsoport (Clean Air Working Group) focuses on a specific district of Budapest through the lens of public space use and civic ownership over them. The case required participants to identify stakeholders in relation to youth, analyze the current process of engagement, and find ways to open up new and more efficient ways of bringing youth into climate equity on an everyday level. Besides social designers, climate-conscious youth, changemakers and design theorists, policymakers, civil organizations and local stakeholders participated in the workshop to create a meaningful action plan and concepts for the future.

Pictures from the event (Photographer: Máté Lakos)

WORKSHOP 2: MIGRATION AID

CHALLENGE

How might we streamline the educational path of migrant children in order to more safely transition towards formal education?

DESCRIPTION

The workshop focused on the topic of educational pathways of migrant children. The case study provided by Migration Aid helped participants to identify stakeholders in the process on a local level, analyze the current situation of relocating children in a liminal educational setting and possible pathways towards formal school education, seeking ways to help families make informed decisions. Besides social designers, socially conscious youth, changemakers and design theorists, policymakers, civil organizations and local stakeholders participated in the workshop to create a meaningful recommendation for the future that is mindful of current policy and legal barriers.

Pictures from the event (Photographer: Máté Lakos)

WORKSHOP 3: SHELTER FOUNDATION

CHALLENGE

How might we activate youth in order to better engage them in long-term, specialised volunteering and how can the well-being of the actors grow together through their cooperation?

DESCRIPTION

The workshop focused on the topic of youth engagement in housing poverty and homeless care services. The case study provided by Menhely Alapvítány (Shelter Foundation) helped participants to understand the interconnected network of stakeholders in the process on a local level, analyze the current process of engagement and find ways to open up new and more efficient ways of bringing youth into housing-related volunteer work in a long-term and specialized way, creating lasting engagement and scalable peer-to-peer awareness-raising. Participants consisted of social designers, socially conscious youth, changemakers and design theorists, as well as policymakers, civil organizations and local stakeholders, and aimed to create a meaningful recommendation for the future.

Pictures from the event (Photographer: Máté Lakos)

Appendix

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