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Towards a mapping of empathic design methods

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Abstract: Empathic design methods support designers in developing an empathic understanding of the people they design for. While researchers and designers use many of these methods, the literature falls short in providing an overview of these methods and what they contribute to the innovation process. We conducted two iterative workshops with 5 researchers in empathic design to define and map the properties of 10 selected empathic methods. By providing an overview, a mapping of empathic methods can support the deployment of empathic interventions. This mapping acts as a guiding tool to support designers in choosing the empathic methods that are the most relevant to their industrial context and audience needs. This work paves the way for further empirical research, inviting the design community to challenge these empathic properties and document how empathic design methods work in a variety of contexts for different audiences.

Keywords: empathic design methods; empathic interventions; design methods mapping, design practice.

1. Introduction

> Empathy is the "ability to feel and understand other's emotions and circumstances" and "a fundamental skill for designers to acquire an in-depth understanding of people (i.e., end-users and other stakeholders) so that products, services, environments, systems, and experiences meet human needs, expectations, and aspirations."
>
> Tellez and Gonzalez-Tobon (2019)

Design scholars emphasize the value of empathy to create solutions with value for others (Surma-aho and Hölttä-Otto, 2022, Smeenk et al., 2016). Designers use empathy as a means for taking the users' perspective ("put themselves into users' shoes") and getting an intuitive

understanding of their world, feelings, emotions, thoughts, and behaviors (Fulton Suri, 2003; Koskinen et al., 2003; Mattelmäki et al., 2014). The concept of empathy can play a crucial role in incorporating diverse voices, perspectives, or experiences in the design process. Empathic methods help designers and researchers understand people on an emotional level (Chang-Arana et al., 2022). These methods embed specific characteristics (Koskinen et al., 2003): they look at what people do, ask people to participate, and encourage designers to try things themselves (Fulton Suri, 2003). Design probes, contextmapping, co-design, or introspective methods are popular examples of empathic methods.

While empathy is often highlighted as a crucial aspect of design processes, there is a risk of assuming a full understanding of the user. As stated by Pagán (2020), "Fake empathy happens when someone thinks they are the customer. People with this belief usually don't test their assumptions, so they end up making decisions based on incomplete or inaccurate information." (p.78). In Design Thinking, the term "empathize" is used to refer to the initial phase of the process, which involves user-centric research, without necessarily ensuring empathic understanding of the users. The true value of empathic methods lies in their application, where a deeper understanding can be achieved. Empathy entails emotionally connecting with users, allowing the designer's personal experiences and priorities to shape their understanding of the user to some extent. Therefore, when it comes to comprehending the user's needs, reflection, positionality, and openness are crucial factors that determine the quality of empathy in design. Contrary to the psychological construct of empathy as a personality trait which has led to some criticisms in the community, empathy in design is better understood as a skillset, including attitudes, skills, and knowledge (cf. the empathic formation concept by Smeenk et al., 2019). Following the dialogical approach to empathy by Wright & McCarthy (2008), each person engages from their own perspectives and appreciates the other's perspective as other. "In an empathic relationship the 'designer' does not relinquish his/her position to 'become the user', a position from which nothing new can be created, rather the designer responds to what they see as the user's world from their own perspective as designer".

If the existing literature provides an overall definition and a frame for empathic methods within empathic design, the current body of knowledge falls short in defining the "empathic properties" of each method: how do they prompt empathy? Which dimensions of empathy do they address? How effective are they in specific contexts or for specific audiences? (Cash et al., 2023). In industry, design practitioners often endorse the responsibility to spread users' voices inside organizations and break silos between teams about the vision of user experience. Thus designers work with 'audiences'; those professionals who develop final products and services based on customer insights. For instance, they might collaborate with developers to deliver the experience on a website or with frontline staff to shape an optimal service experience. Empathic methods are a way of involving others in a human-centered approach.

In this paper, we define and map the empathic properties of ten methods used within an empathic approach. We relied and built on the categorization and definitions proposed in

prior work (Chang-Arana et al., 2022; Fulton Suri, 2003; Koskinen et al., 2003; Lee, 2014; Mattelmäki et al., 2014; Sanders and Stappers, 2008; Smeenk et al., 2019). We first looked at the objectives of these methods, their properties, the stages of the empathy process in design (Kouprie and Sleeswijk Visser, 2009; Smeenk et al., 2019) they relate to, and the empathy dimensions they are likely to prompt. Beyond the design team, we also reflected on other professionals who could benefit from developing empathic understanding, for instance in the context of service design. The mapping of empathic methods we propose acts as a guiding tool for design practitioners in choosing the empathic methods that are the most relevant to their industrial context and the audience for which to prompt empathy with their customers.

2. Empathic design methods: mapping, models, and theories

The existing literature broadly defines empathic design methods (Fulton Suri, 2003; Koskinen et al., 2003; Lee, 2014). The framing and focus depends on the researchers, for instance, the properties (e.g., Koskinen et al., 2003), the perspectives they support (e.g., Smeenk et al., 2016), or objectives (e.g., Surma-aho and Hölttä-Otto, 2022). As argued by Wright and McCarthy (2008), empathic design methods have the following characteristics: (a) they emphasize the designer's orientation to the other person, and their motivation to understand and help, (b) they bear attention to the affective and emotional in relationships, (c) the quality of the relationship between designer and user supported by the method is likely to provide opportunities to attune to the needs and emotional responses of the user. Wright and McCarthy (2008) grouped empathic methods into three categories: ethnography-based methods which capture users' lived experiences in situ (e.g., participant observation) or via specific media (e.g., cultural probes); narrative-based methods which capture aggregate users brought to life through crafted, life-inspired experiences (e.g., personae, scenarios, design documentaries); and methods for imagining others where designers enact behaviors as if they were the users for instance through props or prototypes (e.g., roleplay or experience prototyping).

Table 1 presents a non-exhaustive list of empathic method families documented in the literature. Some of these methods are variants of classical user research methods (e.g., empathy interviews) and we point the readers to Wright and McCarthy (2008), who discussed and nuanced the conditions under which they considered methods to be empathic or not. The methods we list also represent different levels of granularity, from specific methods like empathy interviews to more holistic approaches such as participatory design or storytelling methods. Note that some methods of interest, such as technology biographies (Blythe, Monk & Park, 2002), character-driven scenarios (Nielsen, 2002), or classical personas (Cooper, 1999), were not explicitly included. Some like personas have for instance been criticized for lacking depth to support imaginative identification (Wright and McCarthy, 2008); Others are included as part of overarching categories that are impossible to detail in the present paper which does not attempt to provide a comprehensive review of the literature. Practitioners have categorized them according to their corresponding stages in the classical

double-diamond design process (e.g., Pagán, 2022a). Most of those mentioned here are used in the "discover" phase of the design process.

Table 1 Key empathic design methods documented in the literature.

Empathic method family	**Description**	**References examples**
Autobiographical design	form of "design research drawing on extensive, genuine usage by those creating or building the system." (Neustaedter and Sengers, 2012). This is usually the designers' personal experience when using technologies for which they are the audience. Practitioners refer to the "Dogfooding" technique (Pagán, 2022b).	Neustaedter and Sengers (2012), Wright and McCarthy (2008), Pagán (2022b)
Contextmapping	set of techniques to elicit latent needs information and map the everyday contexts of people's interaction with products and services, but also to bring this information to a design team in a form that serves the generation of human-centered solutions designs	Sleeswijk Visser et al. (2005)
Cultural / Empathy probes	kits of creative and suggestive activities to explore people's lives and experiences in their real context. Probes encourage people to interpret, document, and express their experiences and are used to inspire designers. Probes support the empathic understanding of people as if they were telling their stories directly. The activities include, e.g., filling postcards, taking pictures, drawing.	Gaver et al. (1999), Koskinen et al. (2003), Mattelmäki (2006), Mattelmäki & Batterbee (2002), Wright and McCarthy (2008)
Design documentaries	narrative design method aimed at communicating rich, multidimensional accounts of people's lived experiences. The documentary approach varies according to how explicit the involvement of the filmmaker is. Design documentaries are meant to inform and inspire design, and embody a dialectic between the perspective of a researcher / filmmaker and the rich reality captured.	Raijmakers et al. (2006)
Design games	mediate others' perspectives to support empathy. These are usually cards or boardgames but can also be digital. Such games engage designers and other professionals in active assignments to explore the users' perspective.	Alkaya et al. (2012), Mattelmäki et al. (2014), Papoutsi and Drigas (2016), Vaajakallio and Mattelmäki (2014)
Empathy interviews	interview type usually involving a 1:1 conversation that relies on open-ended questions that elicit stories about people's experiences. The interviewer can follow a specific protocol to probe more deeply into stories than a more traditional interview.	Nelsestuen and Smith (2020)

Experience prototyping	tools and techniques "designed to understand, explore, or communicate what it might be like to engage with the product, space, or system" being designed.	Buchenau & Suri (2000)
Journey maps	visual synthetic representations of the user experience with a service or product, usually on a timeline. It documents the user's interactions with the service (touchpoints) through the different channels offered.	Stickdorn et al. (2018) Lallemand et al. (2022)
Participatory, co-design, and co-creative methods	collect data through direct contact and collaborative activities with users, stakeholders, and designers to generate ideas and solutions. Co-creation usually includes generative activities focused on making with visual and tactile material. It happens in an overall co-design process, including users at different stages of the design process. These techniques are grounded in a participatory design approach, entailing political and social implications.	Akoglu and Dankl (2021), Sanders and Stappers (2008, 2012), Smeenk et al. (2016), Sustar & Mattelmäki (2017), Yuan and Dong (2014), Sleeswiik Visser & Kouprie (2008), Alkaya et al (2012)
Role-plays	Designers act out situations to understand and include people's perspectives in a participative approach. The designer plays the customer's role, immersing themselves in the experience. Acting in a role invites one to explore someone else's emotional states.	Medler and Magerko (2010), Newell et al. (2006), Pagán (2022b), Wright & McCarthy (2008)
Simulators	are artifacts that help to simulate others' contexts and behaviors (e.g., dementia). Simulators engage the designers in people's experiences. The simulators can be physical or virtual spaces reproducing specific realities like those of dementia people, elders, or young people.	Kullman (2016), Smeenk et al. (2017), Cardoso & Clarkson (2012), Fulton Suri et al. (2005)
Storytelling methods	use scenarios to communicate people's experience with a product or service. Stories provide rich descriptions, while narrative techniques facilitate imagination. Storytelling methods include design tools such as personas, scenarios, narrative vignettes, and storyboards.	Battarbee in Koskinen et al. (2003), Wright & McCarthy (2008)

The theories of empathy in design are recent and only a few empirical studies currently inform or challenge them. Kouprie and Sleeswijk Visser (2009) introduced a four-phase framework for empathic design. The model illustrates a deliberate act of stepping in and out of others' lives, appealing to cognitive and affective empathy. First, designers approach the users' world through discovery. This triggers their curiosity and willingness to understand users' experiences. Then follows the immersion, where they internalize the users' point of ref-

erence without judging them. During the connection phase, they reflect on their own experiences. In the final detachment phase, they regain distance to ideate and find solutions. In this paper, we consider such empathy dimensions (see Table 4) – integrated into subsequent models, e.g., Smeenk, Sturm, Terken & Eggen, 2018 – as instrumental in understanding at which level design methods or approaches operate. Other authors defined the landscape of design research and practice according to matrixes or intersecting dimensions. Sanders and Stappers' (2008) model includes the techniques (design-led vs. research-led) and the designers' mindset (expert vs. participatory). Two dimensions are commonly found in models of empathy in design (with various labels): the opposition versus self and others and the distinction between cognitive and affective empathy (Hess & Fila, 2016, Dong et al. 2017, Smeenk et al. 2018, Sandman et al., 2020). Smeenk, Sturm & Eggen (2019) suggested the notion of empathic formation, "the formative process of becoming an empathic design professional", with the aim to identify the factors that foster empathy in design from a more contextual position. Their Empathic Formation Compass, integrating most dimensions identified in prior work, includes the three perspectives a designer can take (the first-, second-, and third-person perspective). It also represents the information sources and the factors that foster empathy in design. Each perspective relates to a specific source of information (designers' lived experiences or work, or others' lived experiences or work), which in turn stimulates a distinct mindset: personal experience, sensitive, self-aware, or emotional interest.

In this section, we reviewed key literature on empathic design methods, showcasing examples of methods, and discussing the different categorizations or models proposed in prior work. In the following, we will present our rationale and approach to mapping empathic design methods.

3. Development of the mapping of empathic methods

We mapped empathic methods during two iterative workshops of 3 hours with N = 5 researchers in design, methods, and empathy (two are co-authors of this paper). Each researcher contributing to the mapping has a specific expertise, which guides their evaluation. The mapping and accompanying discussion points hence include these partial and subjective views. Table 2 describes the expertise of the workshop participants and their role in the analysis.

Table 2 Expertise of the researchers participating in the workshops

	Relevant expertise	**Role in the analysis**
Facilitator (lead author)	researched physical journey maps, love & breakups, and co-creation methods to prompt service employees' empathic understanding of the customers' experiences	
P1 (co-author)	developed a framework on empathy in design (based on literature from psychology and sociology) supporting designers in applying empathic approaches in their process	Initial elicitation of properties and in-depth insights on the process

P2 (co-author)	researcher expert in methods, having hands-on experience with physical journey maps, love & breakup declarations, co-creation, autobiographical approaches, and role-play - and extensive knowledge about the whole set of methods	Review and refinement of properties; Mapping the properties; Methods ranking
P3 (external)	user research practitioner with strong methodological expertise in user-centered design. Had recently contributed to an industrial project deploying several empathic design methods.	Mapping the properties; Methods ranking
P4 (external)	user research practitioner with expertise in personas, journey mapping, and storytelling methods.	Mapping the properties; Methods ranking
P5 (external)	researched how user experience can be captured and relived by designers, and how this may influence designer empathy and design output	Initial elicitation of properties and exploratory mapping on three methods

The two workshops included four stages (Figure 2) and followed a similar protocol. In the first session, participants grouped empathic properties in themes, which were used and iterated upon in the second session.

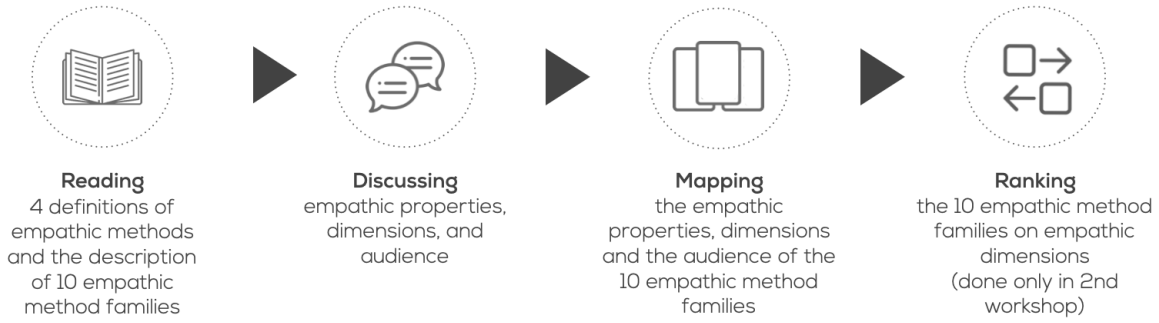

Figure 2 Overview of the workshop sessions.

First, participants were asked to read four definitions of empathic methods (Fulton Suri, 2003; Koskinen et al., 2003; Lee, 2004; Mattelmäki et al., 2014, see Supplementary material) and highlight key elements (Figure 3). We also shared the definitions of ten empathic methods (Table 1). Second, we asked the participants to select one empathic method and discuss its properties based on the provided empathic dimensions (Table 2), the stage of the empathic process it relates to, and for which audience in the organization they would be suitable. Participants were free to add additional empathic properties. The discussion lasted from 5 to 30 minutes per method. Last, the participants ranked the methods on four continuums according to the dimension of empathy prompted. The mapping presented in this paper has been iteratively refined through this process involving methodological discussions, elicitation

of properties and dimensions, the application of examples from practice, and a constant grounding in theories and models of empathy in design.

Figure 3 Researchers are selecting and plotting the empathic methods during the two workshops.

4.1 Properties of empathic design methods

The literature on empathic design methods includes some considerations about what makes a method an empathic method (Wright & McCarthy, 2008), along with numerous exemplars of methods considered as empathic methods. These exemplars originate from different traditions and overall showcase a large diversity in the inherent properties of the methods. Authors like Koskinen et al. (2003) and Fulton Suri (2003) explicitly describe empathic properties, for instance in terms of the experience provided or the ways to empathize. Some of these properties say something about the materiality of the method (e.g., use of "visual and tactile material providing designers with inspiration, not just data", Koskinen, 2003). As the field evolved, scholars subsequently attempted to conceptualize the processes of empathy in design and dimensions of empathic methods and tools (see Section 2 for a brief review). Dimensions around the mindset of the designer, the navigation between first, second, and third perspectives, or the objectives pursued were suggested and progressively refined by design scholars. These dimensions and properties are currently relatively scattered in published work. Reflecting on these properties supports designers in making informed choices: for instance, Smeenk et al. (2019) affirm that their *research-led* versus *design-led* dimensions (from Sanders and Stappers, 2008) support designers in deliberately choosing a more subjective or objective approach. Similarly, the distinctions between *expert mindset* and *participatory mindset* enable designers to choose between designing *for* or *with* users. Reviewing the properties of empathic design methods and mapping them under a comparable format can serve as a grid to *read*, categorize, and research empathic methods or approaches. In the

first workshop, we reviewed, discussed, merged, and classified 41 characteristics of empathic methods into empathic properties based on relevant literature. We refined the outcomes in the second workshop by applying them to exemplars of methods. Table 3 presents our synthesis of 28 empathic properties, categorized into 10 themes. Noteworthily, as the field of empathic design is developing, this list is not exhaustive; we expect this work to grow as new initiatives and methods are researched.

Table 3 Properties used to read and understand empathic design methods.

Category	Empathic property	Meaning	Based on the references
Experience	Playful and fun	using playful and fun activities	Koskinen et al. (2003) Wright and McCarthy (2008)
	Creative	using creative materials	
	Unfinished/crafty	deliberately cheap and "low tech", using crafty materials that connect the designer and audience and leave space for interpretation	
	Imaginative	supporting the imagination of a future experience	
Modality	Visual	using visual materials used	Koskinen et al. (2003)
	Tactile	tactile materials used	
	Other modalities	stimulating other senses through materials (e.g., sound, taste)	
Orientation	User-centered	focus on the human experience	Koskinen et al. (2003)
	Designer-centered	focus on the designer experience	Neustaedter & Sengers (2012)
	Society-centered	focus on the society experience	Manzini (2015)
	Object-centered	focus on the object experience	Giaccardi et al. (2016) Rozendaal et al. (2019)
	More than human	focus on the nature experience	Yoo et al. (2023), Vella et al. (2021)
Temporality	Past-oriented	focus on the past experience	Sanders and Stappers (2012)
	Present-oriented	focus on the present experience	

	Future-oriented	focus on the future experience	Koskinen et al. (2003), Lee (2014), Mattelmäki et al. (2014)
Understanding level	In-depth	building an in-depth and intuitive understanding of people	Smeenk et al. (2016)
	Intimate	building an intimate and affective understanding with people	Dandavate et al. (1996), Mattelmäki (2006), Su et al. (2017)
	Embodied	supporting an embodied understanding	Marshall et al. (2013), Wilde et al. (2017)
Ways to empathize		looking at what people do/say	Fulton Suri (2003)
		asking people to participate	
		inviting to try things ourselves	
Perspective navigation	First-person	Employees' personal perspectives	Smeenk et al. (2016)
	Second-person	Learning about someone's perspective	
	Third-person	Indirectly gathering information	
Context	Reality	happening in real context	Koskinen et al. (2003), Sleeswijk Visser et al. (2005)
	Simulative	simulating reality	Smeenk et al. (2018)
Mindset context	Participatory	involves designers working with people, who are seen as the true experts of their experiences	Sanders and Stappers (2008), Smeenk et al. (2019)
	Expert mindset	designing for people: designers are the design experts and the participants are reactive informers	
Design objective	Design-led	supporting inspiration	Sanders and Stappers (2008), Smeenk et al. (2019)
	Research-led	supporting user research	
	Sensitive-led	supporting sensitive understanding	

4.2 Empathy dimensions

We mapped the empathic methods on empathy dimensions derived from Kouprie and Sleeswijk Visser (2009), Smeenk et al. (2019) and Drouet et al. (2022) (Table 4).

Table 4 Theoretical empathy dimensions

Dimension	Definition
Supporting willingness to engage with user experiences	Willingness to learn from their users, being interested and curious about their behavior and experiences
Taking others' perspectives	Ability to take users' perspectives
Allowing personal experiences	Ability to use their personal experience with the service to understand users' experience
Supporting distinguishing of self and other	Ability to distinguish between their experience and the one of users (self/other distinction)

5. Mapping key empathic methods

Following the workshops, the first and last authors applied the mapping to a selection of ten empathic method families: design probes, love and breakup methods, design documentaries, role-plays, autobiographical methods, wearable simulators, physical journey maps, co-creation methods, virtual reality, and game designs. We use the label "method families" to cover the variety of techniques they include. We acknowledge that yet each technique could be mapped differently according to how they are used.

The goal of systematically mapping a large selection of methods and of "forcing ourselves" to create a "consensual" classification for each method was threefold: (a) challenging the properties against additional material to bring further insights, and uncover the potential multiple interpretations of the included properties and refining or clarifying them, (b) considering which properties are inherent to the method, as compared to dimensions that depend on the application of the methods in a specific context, (c) identifying the extent to which the included properties were specific enough to define and eventually distinguish different empathic methods. A fourth goal refers to one of the contributions made through this publication, as we propose the mapping of 10 methods as exemplars to be used and challenged by design researchers.

Each researcher mapped the methods individually before extensively discussing their choices. The main points of debates revolved around the intangible properties of the methods, e.g., the orientation or understanding level. To find alignment, the two authors reminded themselves to consider the overarching method family and principles rather than the particular applications of a method. This was not always easy as the level of granularity

between the methods selected varied greatly. During the workshops, a dimension of scalability of the method and targeted audience was discussed as relevant, especially when considering the usefulness of our reflections for practitioners. Its mapping however proved particularly complex, as contradicting arguments often sounded like "it depends on how you apply it". We also discussed the extent to which the included properties were specific enough to define and eventually distinguish different empathic methods. As an example, if a property was never used or used by all the methods, we questioned its relevance. In the former case, it could be an under-explored area and opportunity for further empathic method development (see our discussion around more-than-human methods in Section 7), in the later, the property could be too generic to be useful (e.g., the method being "targeted at the fuzzy front end of the design process", Koskinen et al., 2003). From our empathic properties, we realized that all but one of the methods we analyzed entailed at least one of the aspects of the "Experience" category (being playful, imaginative, crafty, or creative). The exception was the simulators (for instance aging simulation kits), which we did not categorize as any of these. However, simulators use different modalities and engage with the body (the understanding level is "embodied").

Figure 4 presents the mapping of three methods, the others are included as Supplementary material.

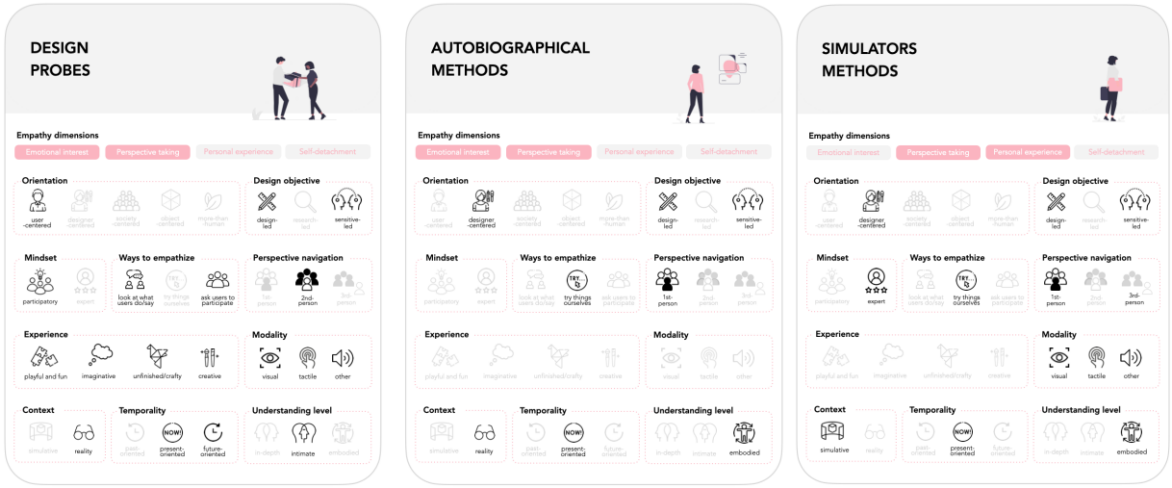

Figure 4 Examples of mapping of three empathic methods (see full version in Supplentary material).

5.1. Use cases: physical journey map and love and breakup methods

To exemplify how the empathic properties and dimensions of the mapping work in practice, we present two illustrative use cases of real examples of empathic methods interventions and their mapping (Figures 5). Based on empirical data, these cases guided our reflections to bridge theory and practice and were used as key analysis material.

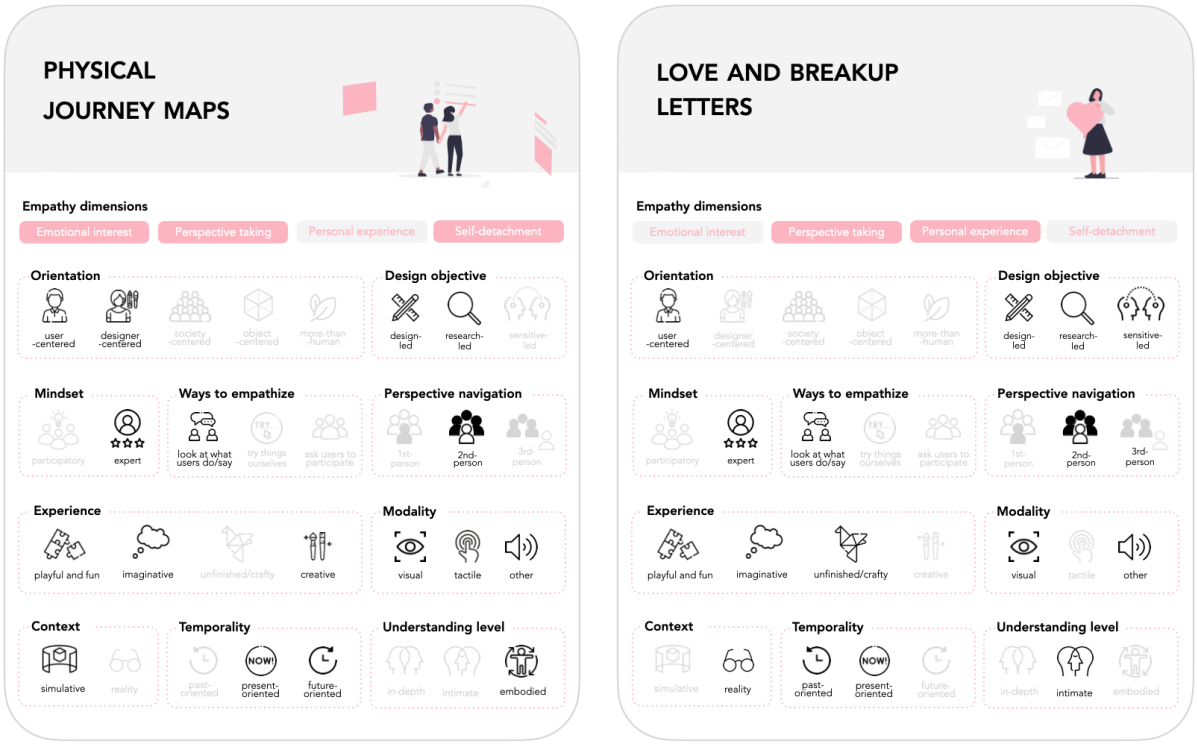

Figure 5 Mapping of the physical journey maps and love & break up declarations by empathic dimensions and properties.

Use Case 1: Physical journey mapping

Physical journey maps are physical installations staging user research data and insights through various mediums and sensory modalities to represent the journeys of the users of a service or a product (Lallemand et al., 2022). In a previous study, we physicalized a passenger journey map based on data from a railway company (Figure 6) and tested the prototype with employees to prompt empathy towards passengers (Lallemand et al., 2022). We invited the employees to reflect on how connected they felt to the passengers and how to improve the service experience.

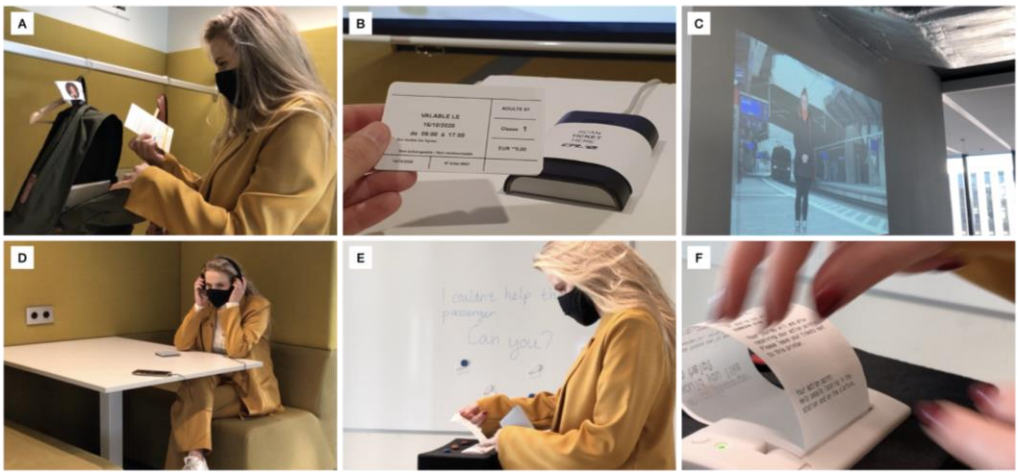

Figure 6 With physical journey mapping the audience role-plays the customer experience through journeys that are continuously adapted to evolving insights.

Just like its static counterpart, the physical journey map is an embodied way to explore people's worlds, understand their experiences and needs, and encourage the ideation of solutions. As compared to the existing journey mapping method, the *physical* journey map is immersive and uses multisensorial modalities to engage the visitor and stimulate an empathic understanding of the users. The experience is meant to be playful and fun, and more creative than traditional static journey maps. Interestingly, these embodied journey maps were developed purposively to boost the empathic properties of the method, such as imaginative identification (the same criticism being made by Wright and McCarthy, 2008 about personas and character-driven scenarios). The mapping of empathic properties could be used as a tool to reflect on how to *augment* existing methods or reflect on necessary properties to support empathic understanding in novel method development.

The method is human-centered by telling people's stories and designer-centered by asking them to experience the journey. It fundamentally supports the navigation between multiple perspectives, as the experience is meant to immerse visitors in the experience as a passenger, while still at times being placed in an observer role discovering the user data collected and staged by the design team. Regarding the temporality, we discussed how journey maps in general are both used as syntheses of current experiences and also as actionable tools to imagine future experiences. To some extent, we discussed why journey maps could be classified as representing the (near) past, as reflected by the data collected through user research. Reflecting on this case and the reality of the application of physical journey maps in practice also supported insights into the scalability of the method or the audience with which it can be applied. Sharing a complete overview of the experience, this method is adequate for both a skeptic and open-minded audience. Allies of the human-centric approach might be willing to further their empathic understanding with a deeper immersion in the others' world. The method works well with individuals and groups but impacts empathy on the individuals' level. Its scalability at the organizational level, especially if geographically distributed, seems more complex because of the physical aspect of the method (e.g., sensors and actuators).

Use Case 2: Love and breakup declarations

Combining approaches from design probes (Gaver et al., 1999; Mattelmäki, 2006), letters to objects and services, and roleplaying, the L&B method invites people to reflect on their experiences and emotional attachment to technologies, and elicit personal stories.

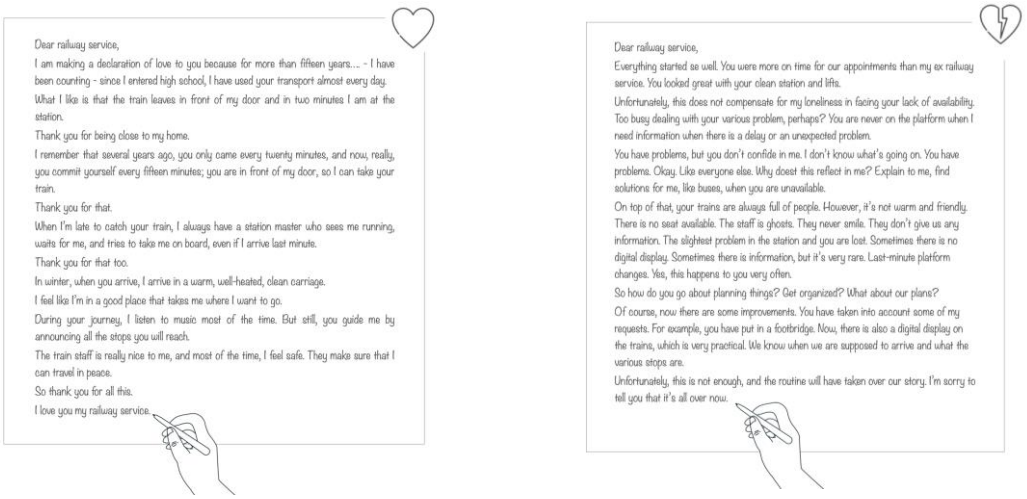

Figure 7 Examples of love and breakup declarations made by customers to their railway service. The audience can extract unmet needs of the customer experience.

In a previous study (Drouet et al. 2023), we played back passengers' love and breakup declarations to 230 railway service employees (Figure 7) and investigated the impact of conveying such user insights on their empathy. Declarations could be shared in a written form, but we decided to share them orally as we believe that customers' voices and tones support intimacy with people and convey the tensions they face with the service. Ideally, this leads to sensitivity and a willingness to engage with user experiences. Real stories and experiences from customers provide the foundation for this method, which we classified as research-led and sensitive-led. The audience navigates between the 2nd-person perspective when listening to the declarations, and potentially the 1st-person perspective when invited to reflect on the emotions felt while listening to the declarations (emotional resonance). This observation led us to reflect on missed opportunities in a design process when empathic methods are unrightfully considered as "indivisible wholes rather than a loosely coupled set of resources that can be molded to the local priorities and the project's context" - as highlighted by Woolrych et al., 2011 in their famous critique of design methods. In this case, combining the declarations with an emotional resonance exercise supports a valuable navigation between perspectives and a deeper engagement. As mentioned by Smeenk et al. (2019), a "better understanding of the relative value of the first-person perspective compared to—and combined with—other fundamental perspectives can contribute to enriching and developing design methodologies". We also discussed the value of perspective navigation in the different approaches, comparing methods that seemingly support only one perspective rather than a mixed perspective approach as proposed by Smeenk et al. (2019). Regarding the audience

and scalability, the method can be used with allies receptive to people's emotions and the relationship metaphor. While the provocativeness of the breakup declaration format could seemingly discourage a skeptical audience, we observed that breakup declarations initiated the most empathy while love declarations better supported the audience's ability and willingness to help improve people's experience. Even within a single method, different formats of user insights can support different dimensions of empathy building. The possibility to broadcast the declarations on-site or online facilitates its scalability at the organizational level. Deployed without a group discussion, the method however rather impacts the individual level.

6. Ranking the methods on empathic dimensions

We hypothesize that some methods mostly contribute to developing emotional interest or support perspective-taking. Others act on a practitioner's personal experience. These help practitioners cultivate the self-awareness needed to recognize that their experiences are different from the users' experiences. So, we ranked the empathic design methods along four empathy dimensions (Table 4). It is worth noting that assessing families of methods, rather than applied instances of a single method, generated discussion between the researchers. The use of any design method varies according to how one configures and applies it in context. For example, autobiographical methods are a subset of introspection methods, which entails five subcategories according to Xue and Desmet (2019). We split the ranking into three zones (left, middle, right) to better illustrate the proximity and differences between the methods (Figure 8). The two authors ranked the "Allowing personal experience" axis with few differences. And their rankings for the "Self/other distinction" axis aligned perfectly. The following section elaborates on the discussion points in more detail.

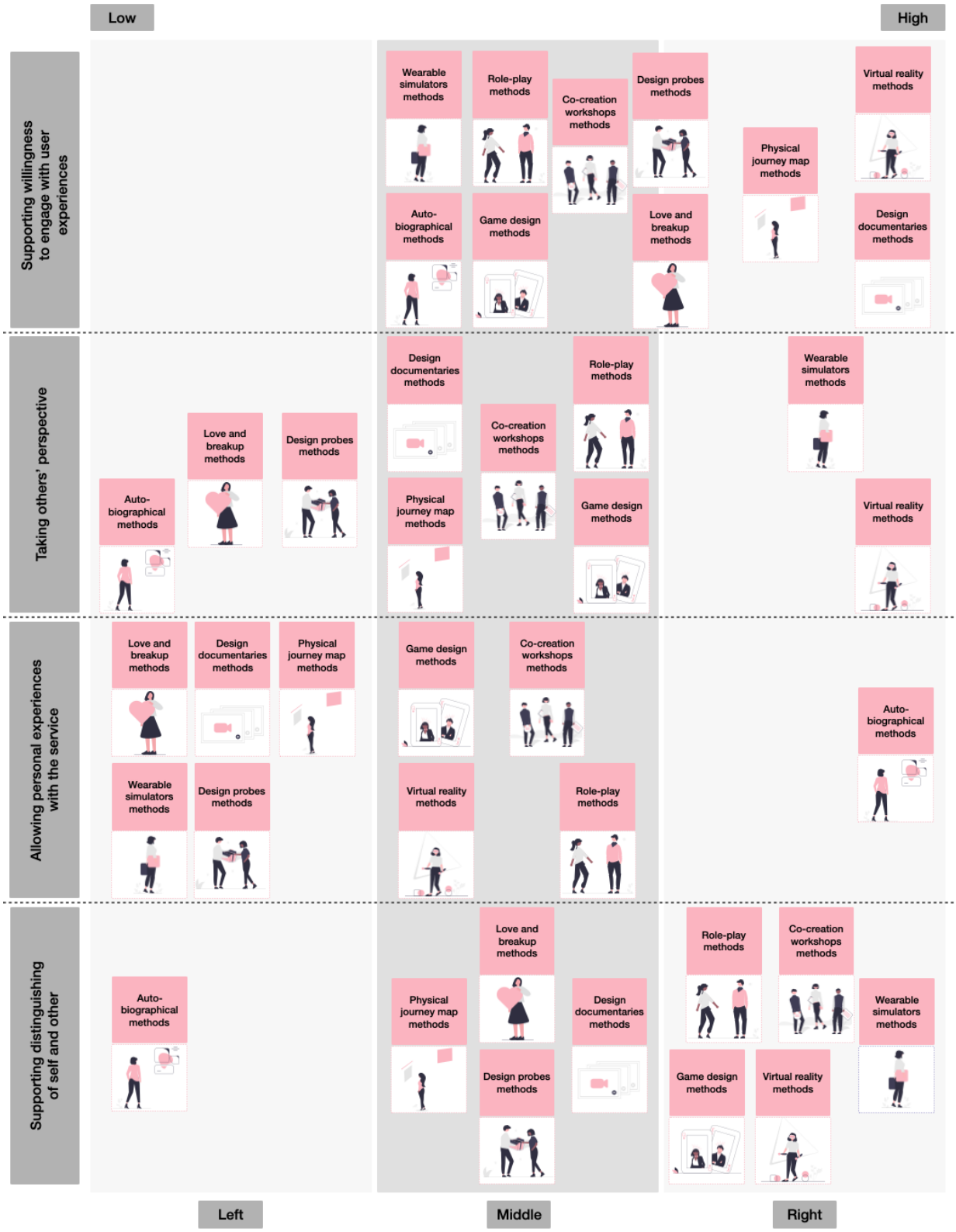

Figure 8 The ranking of the ten empathic methods on the four empathy dimensions.

6.1 Supporting willingness to engage with user experiences

Overall, the authors agreed that all empathic methods prompt a minimal level of curiosity and engagement, and did not rank any in the left area. Methods such as design documentaries and virtual reality show observable realities. They are familiar or attractive in format and thus accessible to trigger interest and curiosity. The authors assessed that the data collected through design probes are more difficult to understand, due to their abstract and interpretative nature. Physical journey maps synthesize user insights to facilitate this understanding. Role play, co-creation, and game design are placed in the middle area because they require some engagement and the right mindset to partake in the activities.

There was much debate on the ranking of co-creation workshops on this axis. The authors concurred that this method allows practitioners to engage directly with customers. This reasoning would place the method in the right zone of the ranking as aligned with prior work. Van Rijn et al. (2011) concluded that out of three sources of information, direct contact was the most effective to prompt designers' empathy towards their users and customers. It is unclear whether these conclusions would similarly apply to other audiences, justifying the location of co-creation in the middle of the ranking. Interestingly, the first author notes that, in a prior empirical study, direct contact in co-creation workshops did not prevent participants from making many unfounded assumptions about each other. On the contrary, it stimulated participants to adopt a defensive perspective and stick to their opinions, effectively defeating the purpose of co-creation. The second author emphasized the importance of active guidance to facilitate participant's willingness to engage with each other's experiences.

Despite being centered on one's own experience, autobiographical methods and wearable simulators were considered as levers for curiosity. By discovering things oneself, one may unveil unmet needs or tensions and wonder how the experience compares for the end users.

6.2 Taking other's perspectives

Here, the authors emphasize that autobiographical methods focus on a practitioner's own perspective, rather than prompting them to take someone else's perspective. According to Neustaedter and Sengers (2012), these methods are only meaningful when practitioners are themselves authentic members of the intended audience. It prompts personal interest in a particular topic; however, the audience use their own perspectives and are not required to project themselves in others' perspectives. As the heart of empathic design includes navigating between 1st, 2nd, 3rd-person perspectives (Smeenk et al., 2019), practitioners could gain much by combining autobiographical methods with other techniques.

Physical journey maps facilitate taking people's perspectives by navigating the synthesis of their world. But this may prompt false empathy, as practitioners interact with a narrative, rather than actual people (Talgorn and Ullerup, 2023). In the love and breakup method, practitioners simply listen passively to people's stories and do not necessarily engage with

them. The first author similarly considers design documentaries to be mitigated on “perspective-taking” because these do not actively prompt people to take the perspective of others. Role-play methods do this actively however, by inviting participants to “step into someone else's shoes.” The last author points out that role-play methods can introduce bias when people base them on fictional data and/or limit their scope too narrowly. Design documentaries address this by including real stories and creating space for broader spectrums of experiences. To define this axis' ranking, the first and last authors assume that real stories more effectively prompt perspective-taking than fictional narratives. Testing this assumption requires further research. The role-play and design game methods allow participants to actively take people's perspectives. As such, they rank higher on the perspective-taking axis.

6.3 Allowing personal experience

The first and last authors agreed that autobiographical methods prompt personal experience the most, as they focus on the participant's own experience. Since co-creation workshops facilitate direct interaction, ideally with personal resonance in every participant, this method family ranks in the middle. Physical journey maps, probes, love and breakup, and design documentaries simply illustrate others’ experiences, so they sit on the left of the ranking.

The first author asserts that wearable simulators, role-play, design games, and VR simulate personal experience. In addition, these methods can also prompt connection with memories of a participant's own life experiences. Still, the second author posits that any participant needing a simulator likely has no relevant personal experience in this context. Also, a person's mental and emotional state influences personal experience. If someone is not receptive while trying a wearable simulator, they might not engage with the experience enough to foster empathy. These methods are thus placed in the middle area of the ranking.

6.4 Supporting distinguishing of self and others

The authors agreed on the rankings for all methods except co-creation workshop. They assume that co-creation prompts more self/other distinction than the role-play, virtual reality, and game design methods. Also direct exchange between co-creation workshop participants better facilitates self-awareness than methods like the love and breakup declarations or physical journey maps. This self-awareness helps workshop participants to distinguish their own experiences from the others. But the distinction remains limited to one moment, in one space, in one particular context. Also, a workshop's facilitator heavily influences the effectiveness of this process. Still, the direct interaction creates space for each workshop participant to to become more cognizant of their own values and needs in relation to the others.

The authors agree that wearable simulators likely prompt the most self/other distinction. Wearing a simulator outfit (e.g., a geriatric simulator, Moore and Conn, 1985) enables one to physically experience a variety of physical and visual challenges (stooped posture, restricted motion, or glaucoma). While simulators are susceptible to the same pitfalls as role-play (fictionalization, limited scope, false empathy), they demonstrate differences in an embodied and eye-opening way. On the other hand, self-oriented autobiographical methods prompt

the least self-awareness. Physical journey maps, love and breakup methods, probes, and design documentaries allow for people to express themselves. This helps practitioners distinguish their own experiences from the other's, so these rank in the middle.

7. Discussion

The mapping of empathic methods proposed in this paper, along with the illustrative examples discussed, fills a gap in synthesizing design literature on empathic methods and making it intelligible for design practitioners. Existing work also falls short in providing guidelines about the audience with which to use empathic methods and how scalable these are in the industry, two points that we discuss in the following.

7.1 A tool for discussing and understanding the space of empathic design methods

Our mapping aims to prompt discussion and a novel understanding of empathic design methods. We present here the first iterations of this work, which raise nuances regarding the empathic properties and objectives of these methods. We call for additional empirical work to document and challenge our current conceptualization, and create a consolidated body-of-knowledge on empathic methods.

We built our mapping on empathic properties and objectives in the literature. However, not the properties extracted from prior work are not all represented in the set of empathic methods we mapped. This led to interesting discussions worth sharing with the community. First, we did not classify any method at this stage as *object-centered* or *more-than-human oriented*. With some adaptations, could we use similar methods to prompt empathy towards objects and nature?

Second, empathic methods are initially made as tools for designers, to prompt their sensitivity towards users and support the design process. They often complement other user research methods and may be built on the assumption that the practitioners using them have already a willingness to engage with users due to their background in HCD and their mission within the organization. What holds for trained design practitioners might not impact other audiences in the same way. For instance, the playful and creative aspects of a method such as design probes or love and breakup letters can support a designer but be a barrier or prompt skepticism from a service employee not familiar with such techniques (Drouet et al., 2023). As another example from our discussions, the confrontation between users and employees during a co-creation session illustrates that direct contact can provoke fixation or defensiveness rather than openness. Even some designers, especially those who are creative and wild thinkers, can find it hard not to directly interpret and generate ideas but really listen and immerse themselves in the users' world. The ease with which a method can onboard unfamiliar audiences in an empathic intervention or prompt the adequate mindset thus appears essential and under-researched.

7.2 A tool for supporting design practitioners in implementing an empathic approach in industry

Practitioners have little time to read design theories and process the findings to get concrete potential applications in their daily work (Lallemand et al., 2022). Thus, we envision mapping empathic methods as a tool to support practitioners' mission of implementing an empathic design approach within their organizations. The mapping aims to guide practitioners in choosing which methods to use to achieve specific objectives, complementing current resources shared by practitioners (Pagán, 2022a, 2022b). It highlights the empathic properties of each method to understand their underlying action mechanisms. Ranking the methods per empathy dimension informs on which method to use to support a specific dimension of empathy. For instance, if a service employee lacks personal experience, autobiographical methods can be used as an intervention.

In addition to empathic properties and dimensions, we also considered in the mapping how empathic design methods can prompt the audience's empathic understanding and to which extent a method is scalable within an organization. These aspects are admittedly context-dependent or at this stage of knowledge about methods more speculative in nature; They should be considered as less inherent to the method per se than the way it is applied in a specific setting. Prior work suggests that the empathic approach needs open-minded participants (Kouprie & Sleeswijk Visser, 2009; Mattelmäki et al., 2014). Implementing an empathic design approach inside an organization also requires human-centric approach ambassadors, called allies or champions (Lallemand and Gronier, 2018; Stickdorn et al., 2018). We identified three types of audiences based on their attitudes: skeptic, open-minded, and allies. Regarding the "scalability" of the methods, we discussed whether the methods can be used by individuals, groups, or an entire organization? Will they in turn have an effect on the individual, the group, or the organizational level? While closely related, these elements are complementary: for instance, an empathic method can be applied to the organizational level while having effect on the individual level.

In its current form, the mapping is rather an academic outcome and not necessarily a practical hands-on format for practitioners. An idea for future work would be to derive attractive tools from it to be used by practitioners, for instance method cards having industry objectives as a starting point. Practitioners could also support the future iterations of the mapping by submitting use cases from practice, especially worthwhile to feed reflections on the empathy dimensions prompted by each method when operationalised in a specific context, as well as matters related to the audience and scalability within an organization.

Finally, as regularly stressed in prior work, there is a need for methods to convince stakeholders and decision makers within organizations about the value of empathy in service design (Alkaya et al, 2012; Postma et al., 2012; Walther et al., 2020) to support the democratization and use of empathic methods in the first place.

8. Limitations and future work

The present work is only an initial step towards mapping empathic design methods. It involves several limitations that should be addressed in future work. Except for three methods for which the authors relied on empirical data collected, the methods have been mapped based on hands-on expertise and assumptions about how each "methods family" might impact empathy dimensions. To refine such a mapping, empirical studies on empathy building should be conducted with all these methods informing their empathic properties and dimensions of empathy they support. Another limitation is that the context and way the methods are deployed by professionals highly influence their effect on the empathic dimensions. Finally, even though our point of focus and chosen vocabulary tend to use methods as the main unit of analysis here, we are sensitive to the shift initiated in the community to frame empathic methods as "evolving processes and constitutive stages rather than tools." (Lee, 2012). As voiced by Smeenk et al. (2019), the focus should "shift from a sensitivity towards empathic techniques to a focus on and sensitivity towards empathic awareness, learning and growth in design".

9. Conclusion

We mapped ten empathic methods according to their empathic properties and objectives. We also identified the scalability and potential impact of the methods. We also ranked them according to the dimensions of empathy they are likely to prompt. Reviewing the properties of empathic design methods and mapping them under a comparable format can serve as a grid to read, categorize, and research empathic methods or approaches. It can serve as an inspiration to practitioners to develop a sensitivity towards empathic awareness and support them in selecting and configuring empathic methods to spread people's perspectives and develop empathic awareness inside their organizations. In terms of scholarly knowledge, our mapping also highlights the need for more knowledge of empathic design methods to understand their impact. We call on the community to challenge this work by conducting more studies to understand empathic methods in context and translate the findings into guidelines for practitioners.

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Supplementary Material. The definitions of empathy, the mapping of the methods, and the ranking on empathic dimensions, can be found at:

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