

Atlas of Intrigue: Unfolding the Defining-Finding Dilemma through Polyphonic Speculation

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<https://doi.org/10.21606/drs.2024.XXX> **LEAVE BLANK FOR INITIAL SUBMISSION**

Abstract: This paper shares the results of a series of speculative co-design workshops that employed sketches and visual metaphors to facilitate collective discussions about a hypothetical Design Research database. The primary objective of these workshops was to explore the challenges related to documenting, sharing, searching, and discovering Design Research examples while simultaneously addressing underlying questions surrounding knowledge-making in the field. Following this approach, we identify six distinctive qualities that characterize Design Research, shedding light on what is referred to as the defining-finding dilemma. The paper finally suggests potential pathways for interaction design to navigate this issue through alternative modes of interaction.

Keywords: design research; metaphors; atlases; polyphonic speculation.

1. Introduction

The Design Research movement, and its practice-oriented methodologies such as Research through Design, have become increasingly established and are thriving (Rodgers, 2016). However, it continues to grapple with some of the challenges of its "pre-paradigmatic" character (Gaver, 2012; Lindley, 2023). Notwithstanding a diverse and extensive body of Design Research projects and research programmes which arguably indicate its success, the field remains methodologically ambiguous and disciplinarily diffuse. The field is defined by heterogenous terminologies and methods, which arguably prevents the many facets of the field from becoming a more cohesive whole (Green & Lindley, 2021). Design Researchers work in and around a vast array of typologies (Pierce 2021), labels, terminologies (Frayling, 1994), methods, and skills (Lindley & Coulton, 2020). This diversity is a key factor contributing to the richness and strength of the field. However, the lack of a clear paradigm may also hinder Design Research's potential impact, both within the academy (as it seeks to



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intersect with other disciplines) and beyond the academy (where it reaches out to inform and impact across different sectors).

In this paper we explore this situation by focusing on challenges surrounding the process of publishing, archiving, and searching for examples of Design Research and/or publications about those examples. This is akin to the challenge of sharing and communicating any kind of research outcome. However, we attune to and focus on some of the specific qualities of Design Research that conspire to make this seemingly innocuous task surprisingly difficult in our field. The work we present in the paper describes a research-focused speculation. This was an exercise intended to surface the properties which contribute to the field's fragmented character and in doing so seeking to better understand how to communicate the value of Design Research, as well as propose practical steps towards appropriate solutions. Ultimately our intention is to enhance the field's potential impact and share its value more widely.

The challenges of publishing, archiving, and searching for Design Research is not only relevant for the Design Research community but also for those interested in adopting Design Research approaches or looking for domain-specific insights arising from a particular Design Research project (Green et. al., 2023). We note several obvious qualities of Design Research that confound this issue. First, accepting that some Design Research is *about* the field of Design Research, for example projects where the main outcome is methodological (Wakkary et. al., 2015) meanwhile some Design Research is applied, for example where the main outcomes is impact achieved through a Design Research intervention (Rodgers 2018).

Next, we might consider that the outputs of Design Research processes are incredibly diverse—images, videos, products, services, performances, exhibitions, experiential elements, objects, or combinations thereof—and are rarely naturally compatible with text-and-image-oriented PDFs that academic repositories tend to accept. While this is an issue in many domains, given that Design Research often relies on physical and interactive processes, this challenge is particularly pertinent in our field. Complicating matters further, many individuals publishing under the auspices of Design Research do not self-identify Design Researchers but instead see their work as using Design Research methods, if not actually *being* Design Research (Lindley & Coulton, 2020; Perry-Kessarais, 2022). Whilst this is a sign of the adoption of Design Research principles across disciplinary boundaries, it can further muddy the waters in the context of a field with no clearly defined paradigmatic core. Consequently, if we consider these factors together, we encounter a cyclical issue: the fragmentation and heterogeneity of the field make it difficult to identify and find examples of Design Research. This challenge, in turn, exacerbates the problem of defining and establishing the field. The result is an intertwined situation that we refer to in this work as *the defining-finding dilemma* of Design Research.

2. Approach

The main contribution of this paper is to explore the defining-finding dilemma following a co-speculation or *polyphonic speculation* approach. Building on Green et. al. (2023) foundational work, we cast this approach as gathering multiple responses to a shared design brief or challenge and using the resulting designs to stimulate discussion and reflection. This method values and incorporates diverse viewpoints and interpretations from different perspectives, allowing for a richer exploration of complex challenges. The term 'polyphonic' is borrowed from music and literature, where it denotes the simultaneous occurrence of multiple independent voices or perspectives.

In 2022 and 2023 we hosted five workshops, at five different Universities, in five countries [left blank for review], each with active and internationally recognised Design Research labs. The workshops were based around the concept of an interactive “Atlas” of Design Research (note that we used the term Atlas, but also asked participants to consider that their speculations could be a repository, database, encyclopaedia, or collection). We asked participants to imagine if there was such a resource, *what* would go in it, *who* would use it, and *how* would they interact with it? By exploring these questions, we sought to unpack the practicalities of creating such a resource, shed more light on the defining-finding dilemma, and in doing so better understand how to support the empowerment of our field.

In this paper we analyse the results of one activity within the workshop. In the context of the workshop this activity was used as an ‘icebreaker’. The activity began with participants being asked to rapidly (in just 2 minutes) illustrate their vision for a database of Design Research, focusing on visualising how a user might interact with it. They then passed their sketches to another person, who continued the drawing using a different coloured pen (again, for just two minutes). A third person completed the sketch. Once complete we held a group discussion asking participants to explain what was in the sketches and their underlying thought processes. Often this would result in engrossing discussions around the complements, contrasts, and conflicts between the various ideas.

While guided by polyphonic speculation, our approach also draws methodologically on sketching and metaphor. Drawing on the idea of sketching as an epistemological tool for conversation (Garner, 2008; Mäkelä, Nimkulrat, & Heikkinen, 2014) we used the sketch exercise as a generative technique to elicit immediate, creative, unconstrained ideas, and then deployed these drawings to stimulate discussions. This builds on a rich tradition of sketching as an accessible means to speculate about alternative possibilities (Sturdee & Lindley, 2019; Yurman, 2020).

Our decision to ask participants to concentrate on their interaction with the Atlas was deliberate. As well as being a functional and clearly defined task, the interactions we asked participants to sketch became proxies for their understanding of the underlying ontology and value proposition of Design Research. Metaphors are frequently employed to prototype new interfaces and structures (Barr, Biddle, & Noble, 2002; Blackwell, 2006; Donath, 2014). Windows, folders, bins, webs, or clouds are more than descriptive tools. They shape,

structure, and prefigure digital systems (Pierce & DiSalvo, 2017), acting as proxies embodying participants' conceptual understanding. Scholars in linguistics have also highlighted the pivotal role metaphors play in rendering complex and abstract phenomena cognitively comprehensible (Lakoff & Johnson, 1980). Alongside sketching, metaphors significantly influence how we approach problems (Schön, 1979), facilitating the transition from mapping existing realities to exploring uncharted ones. This dual-pronged approach guides us towards the development of new models, experiences, understanding, and the innovation of interfaces, services, and products (Lockton et al., 2019).

While the practical tools of this workshop exercise were sketches and metaphors, we were conscious to attend to plural points of view. Rather than purely individual perceptions, the continuum of sketches completed one another, giving shape to richer and more consensual form of collaboration, without necessarily erasing the differences among them. One way we supported this practically was by asking participants each used a different coloured pen, meaning that on each finished sketch individual contributors' marks were visible, valuing difference as a strength, rather than something to be overcome.

Once again this was a conscious strategy to help us represent and explore the diffuse nature of the Design Research landscape in an appropriately complex way. This polyphonic approach to speculation (Green et. Al., 2023) aimed to acknowledge and reflect plural voices, while also trying to identify strategies to use this plurality to produce coherent and actionable responses to the defining-finding dilemma.

2.1 Analysis

Following the approach outlined above, participants produced 56 sketches of speculative interactions with their imagined Atlas of Design Research. After each session, we photographed the sketches to create a visual library. We grouped the images around the themes in the metaphors participants used (which included soups, roads, rivers) and the Design Research qualities expressed through these metaphors (e.g., serendipity, playfulness, embodied knowledge). Based on this thematic analysis we have identified six metaphors and their corresponding Design Research qualities.

We note there are some limitations to our analysis. For example, sometimes sketches could belong to more than one cluster. In these cases, through iterative clustering and re-clustering, we focused on the most prominent quality to define each group and element. Consequently, these clusters do not necessarily exclude one another; instead, they offer an interconnected set of possible emphases: a focus on experience, objects, or processes. We also note that while it would be possible to do a geographical comparison between participants in different labs/countries, due to the sample size, we chose not to pursue that approach. Instead, we have focused on metaphors that spontaneously repeated across the different workshops, reinforcing this way the significance of those collective imaginaries to the Design Research community.

In the subsequent sections, we present the outcomes of this clustering process and the associated Design Research qualities. We then analyse these findings to propose design interaction inspirations, which are summarized as key takeaways.

3. Metaphors

3.1 Soups

Participants of different workshops used the metaphor of “soup” to express how they would interact with a Design Research database and how they relate with Design Research as a complex field. For example, figure 1 highlights the role of designers as cooks combining different ingredients — practices, ideas, questions, etc — to produce knowledge. Figures 2 and 3 recreate soups with different outputs of Design Research including mood boards and exhibitions.



Figure 1. Example of soup as a metaphor for how we interact with Design Research. The sketch depicts a chef cooking what participants understood to be a “soup of Design Research” that combines different elements, questions, and ideas.

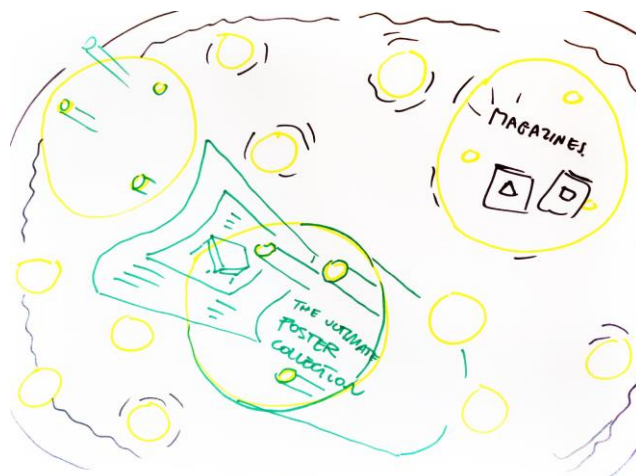


Figure 2. A ‘soup’ comprising multiple publications, also reflecting the fragmentation of outputs in the field.

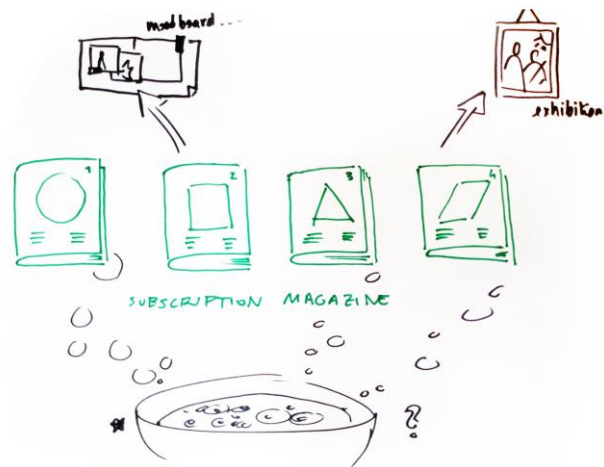


Figure 3 Another multiple-publication soup, with hypothetical links to exhibitions and mood boards.

Participants frequently used this metaphor to express the *messiness* of Design Research processes, combined with what we understand to be a *bricolage* approach as a means of making sense of this complexity. Design as bricolage refers to an epistemic approach that combines various concepts, approaches, and practices, generating knowledge through continuous material evaluation and making (Louridas, 1999; Matthews, 2021). Similarly, the metaphor of soups and cookers (see Figure 1) illustrates how Design Research unfolds by creatively mixing different "ingredients" and exploring connections through experimentation. While cooking, we consistently taste our dishes to guide our subsequent decisions, such as adding new ingredients or adjusting seasoning. Designers tend to embrace this epistemic quality, navigating uncertainty through deep negotiation with an unstable material world (Louridas, 1999). Notably, the soup metaphor emphasises the messiness and non-linearity of this process, which often resembles a "soup of ideas" until a complex and interconnected phenomenon is finally understood.

3.2 Games of Chance

"Games of chance" emerged as a recurring metaphor in our workshops, encompassing slot machines, roulettes, lotteries, and others. For instance, figures 4, 5 and 6 highlight how we could interact with different research outputs through random interactions instead of a straightforward "search and find" system. This concept signifies *serendipity* as a crucial value for design researchers, referring to unexpected yet valuable findings that arise during research. Unlike systematic, planned, and structured research traditions, it recognises the role of randomness and unplanned situations that can yield significant results (Gaver et. al., 2022).

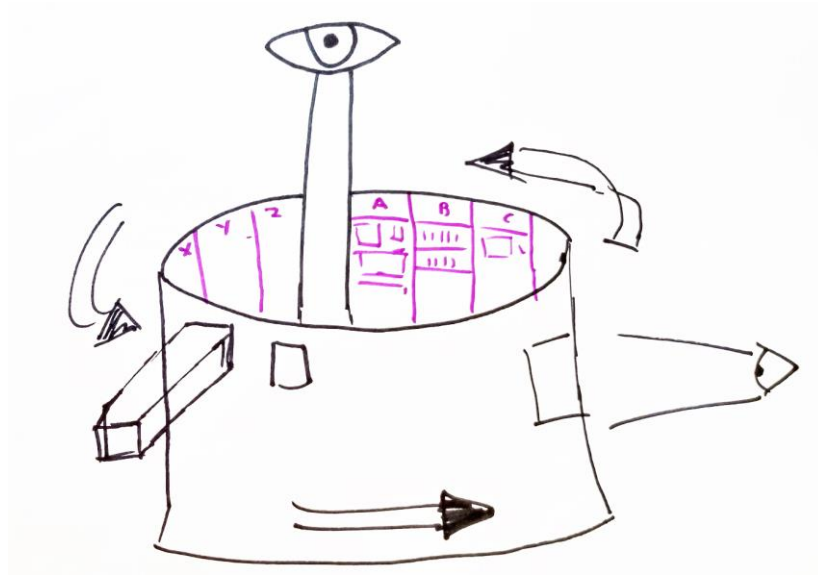


Figure 4 A roulette style game of chance for selecting examples from the Atlas.

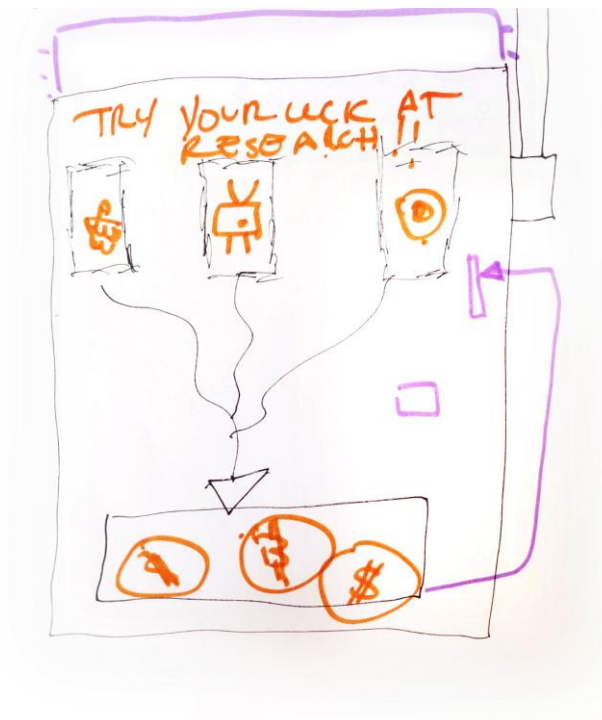


Figure 5. An example of a 'one arm bandit' style chance interaction created to find Design Research examples. The sketch plays with the idea of inviting users to "try your luck at research!".

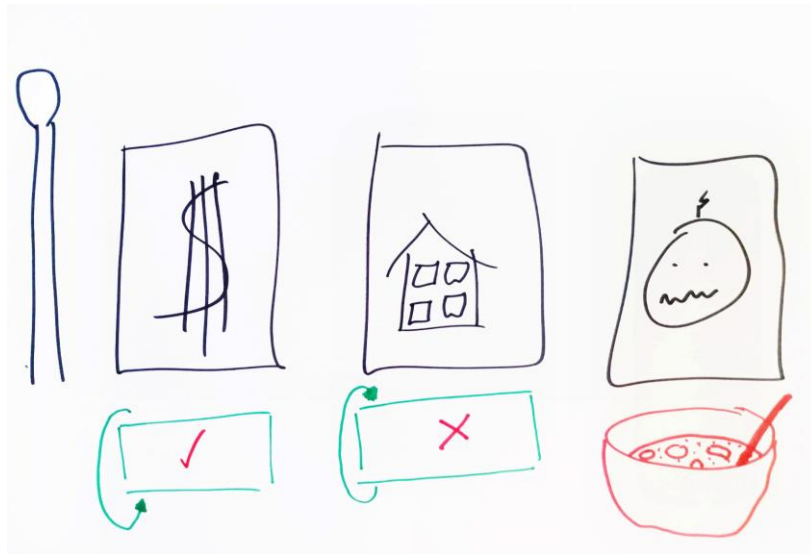


Figure 6. Another slot machine style or one arm bandit random selection machine (also featuring a soup).

The "games of chance" imagery celebrates serendipity and the playfulness and risk-taking associated with Design Research. By viewing research as potentially playful, design researchers are willing to suspend certain rules and conventions. This attribute underpins Design Research practitioners' ability to understand the present and explore the possibility of the future generatively.

3.3 Gift boxes

Boxes of objects also served as a metaphor for the value of *tangible things* in Design Research (i.e., the things that were designed). In various workshops, participants dismissed the idea of a digital repository and explored the option of physically presenting users with objects and products generated by Design Research. For example, figure 7 depicts a person carrying an itinerant car loaded with objects created by design researchers. This person circulates in public spaces rather the indoor areas.

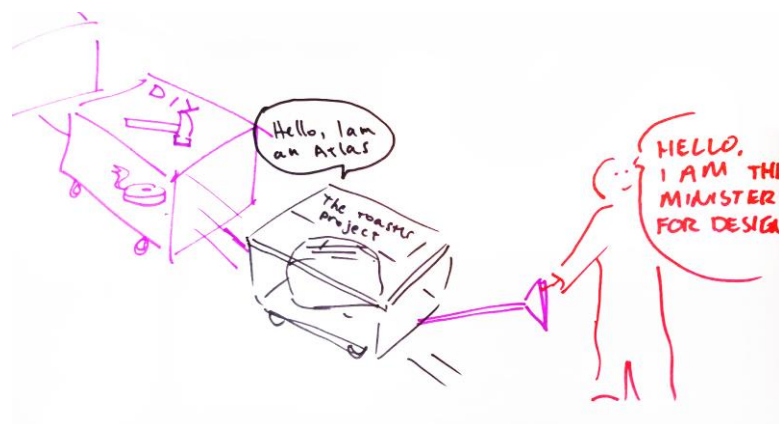


Figure 7 Example of gift boxes as metaphors.

Similarly, figure 8 represents a box sent to people as a gift with unknown and surprising objects. This concept emphasizes materiality as a crucial aspect of knowledge-making in the field and underscores the stories and histories revealed by these objects. Furthermore, engaging with a box of objects—sometimes a surprise box—also invokes the thought-provoking ability of these items, eliciting the excitement of opening a box and discovering the unknown.



Figure 8. Sketch of a mysterious box of entries in the Atlas, with unknown senders or recipients.

3.4 Exhibitions

Participants from different workshops also deployed drawings of exhibitions to imagine how to interact with a Design Research database. Figure 9 proposes a traditional exhibition where visitors can see the connections between various investigations. Similarly, figures 10 and 11 imagine virtual and physical exhibitions (including the use of metaverse), as well as ways of bringing different senses such as smell, sight, and hearing to this experience. Overall, the sketches depict museums, galleries, and metaverse experiences facilitating interaction with diverse audiences and objects.

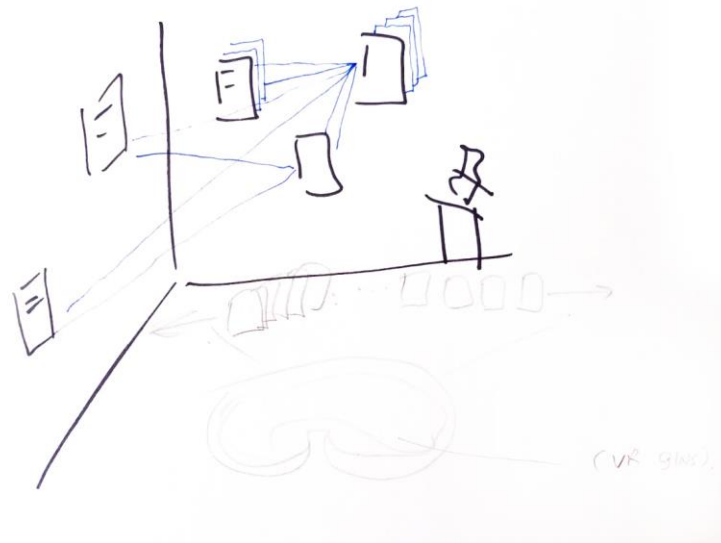


Figure 9. Drawing of an exhibition as an interface (perhaps accessed via VR) to explore entries in the Design Research Atlas.

The "exhibitions" metaphor emphasizes an *experiential epistemology* for showcasing the results of a Design Research approach (Krogh & Koskinen, 2022). This experiential epistemic suggests that Design Researchers regard personal experiences as valuable sources of knowledge. Instead of relying solely on rigorous scientific methods, they attend to learnings acquired through practice, specific craft skills, or even intuitive understanding (Niedderer, 2007).

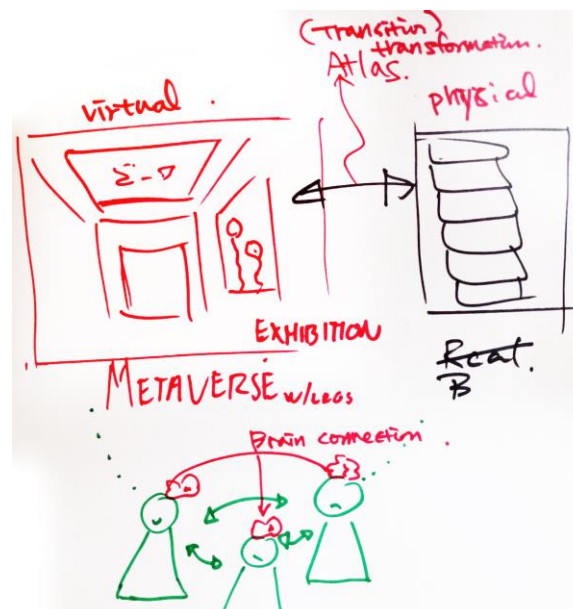


Figure 10. Another exhibition, again exploring the interplay between virtual and physical ways to explore exhibits.

Ultimately, the analogy to exhibitions reflects the need for immersive, performative, and embodied experiences to comprehend and convey Design Research. The sketches depict museums, galleries, and metaverse experiences facilitating interaction with diverse audiences and objects.

3.5 Maps

Different workshops produced maps to express possible ways of interacting and navigating the complexity of Design Research. These maps were not limited to traditional cartographic representations but included incomplete and multi-dimensional maps, enchanted islands with monsters and mermaids, labyrinths, and city maps with endless roads and paths. Figure 11, for instance, shows how “new people in Design Research” must go through the complex world of design. In the same way, participants identified that we must “ride the mess” (figure 12), appreciate the history and future of Design Research (figure 13), and potentially use spatial metaphors to map the landscape of sub-fields such as policy design (figure 14).

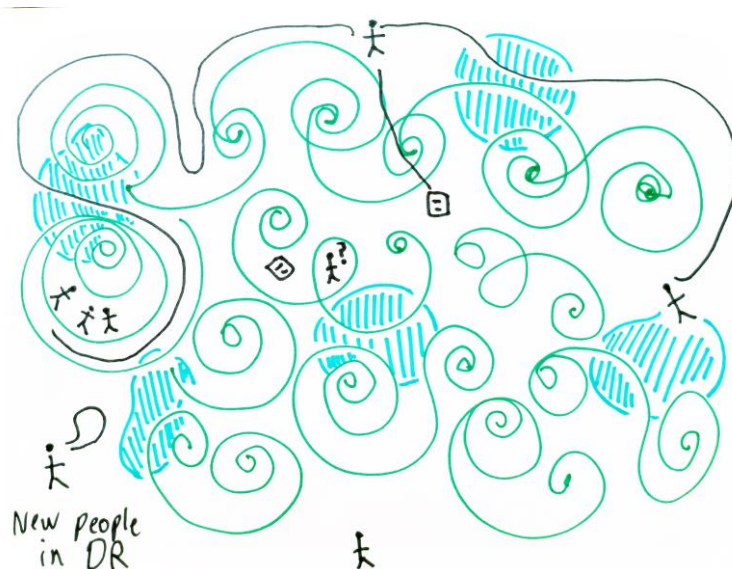


Figure 11. A sketch representing the labyrinth of Design Research.

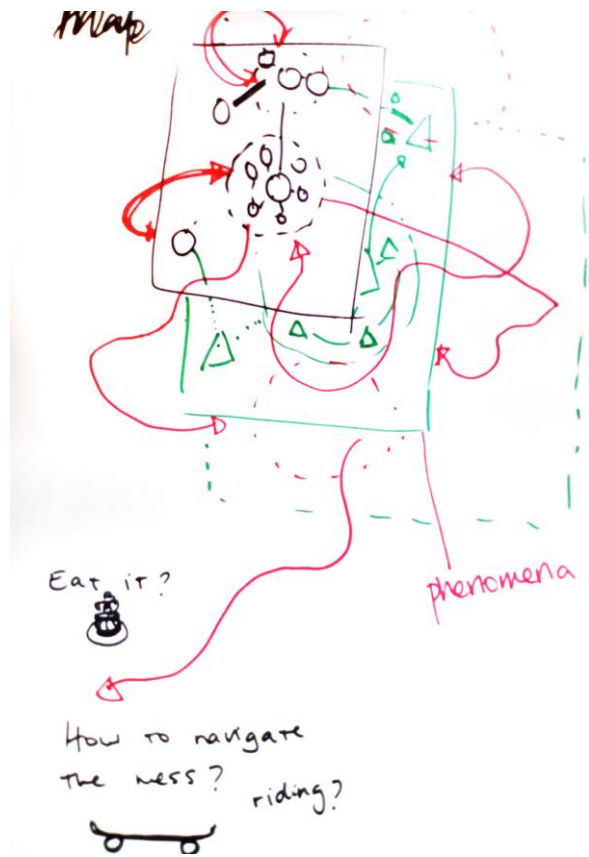


Figure 12. A sketch asking "how to navigate the mess? Riding?"

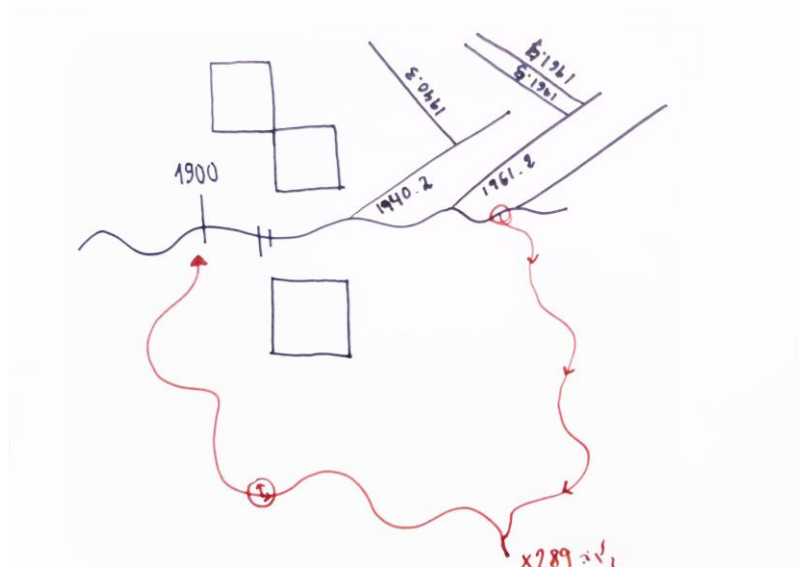


Figure 13. A sketch depicting a temporal or time-based map of Design Research.

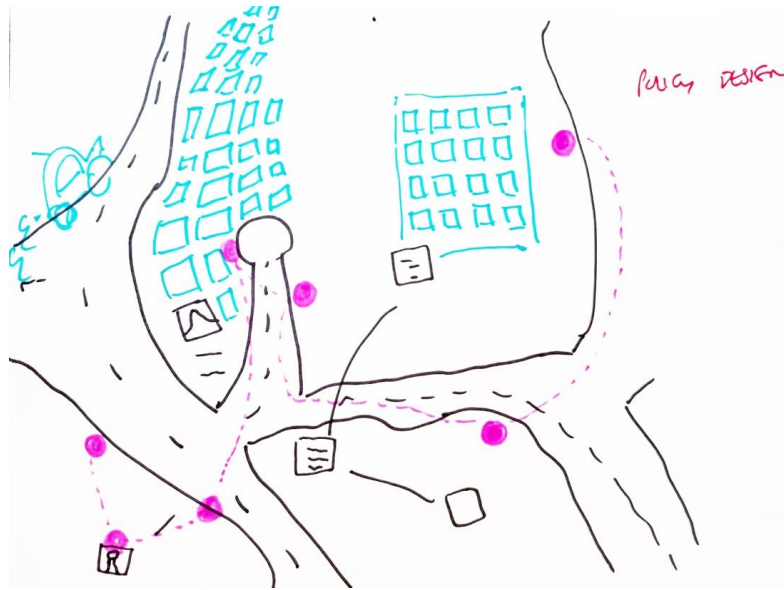


Figure 14. A more traditionally spatial map made of endless roads, with a focus on policy design.

Maps frequently served as metaphors to convey the qualities of systematic thinking and research programs in Design Research. Instead of viewing knowledge-making as the outcome of isolated "research project" units, these maps depicted knowledge as an ongoing, non-linear process that connects diverse learnings across multiple experiences, building broader research programmes (Gaver et al., 2022). In the workshops, maps often represented knowledge-making as an interconnected network while also illustrating the multi-scale and multi-dimensional nature of Design Research. Some maps connected local and global levels, emphasizing Design Research's ability to generate situated knowledge while remaining cognizant of its implications for larger systems. Other maps depicted how Design Research can articulate multiple layers of knowledge, ranging from a product's technical detail to broader theoretical critiques.

3.6 Rivers and stars

Figure 15 plays with the metaphor of sailing "on a river to the sea" to talk about Design Research and how to navigate it. Similarly, figure 16 reminds us that to navigate this field we must be aware of unknown lands surrounded by oceans and inhabited by enchanted mermaids. Figure 17 also draws on the metaphor of navigation and constellation to interact with Design Research.

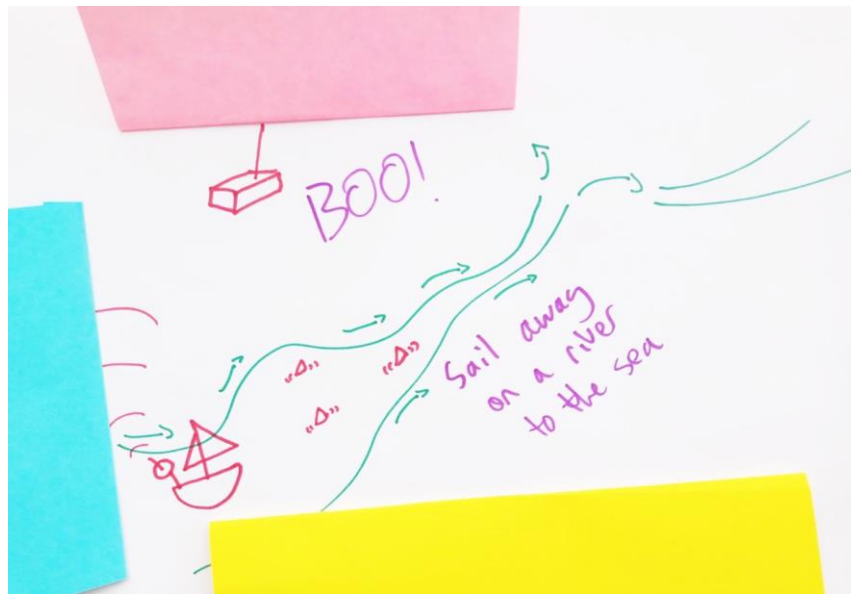


Figure 15. Example of a sketch that uses the metaphor of sailing on a river to reflect how we can interact with Design Research.



Figure 16. Sketch of a map to navigate the oceans and islands of Design Research, a 'siren' acts seductively in an ocean of the unknown, while islands of certainty denote 'in' and 'out' lands—hinting towards familiar and foreign practices.

Metaphors of "rivers" and other natural phenomena emerged at various points to convey the drifting quality of design researchers. Like sailing on a river, design researchers often exhibit the skill of navigating unexpected turns and adapting to new situations. Instead of viewing drifting from original questions as a failure, designers perceive it as the ability to continuously learn and adjust (Krogh & Koskinen, 2022). Consequently, river metaphors shift our focus to the process of Design Research rather than exclusively concentrating on its outcomes. These metaphors also invoke a sense of adventure, highlighting the unpredictability of the research process.

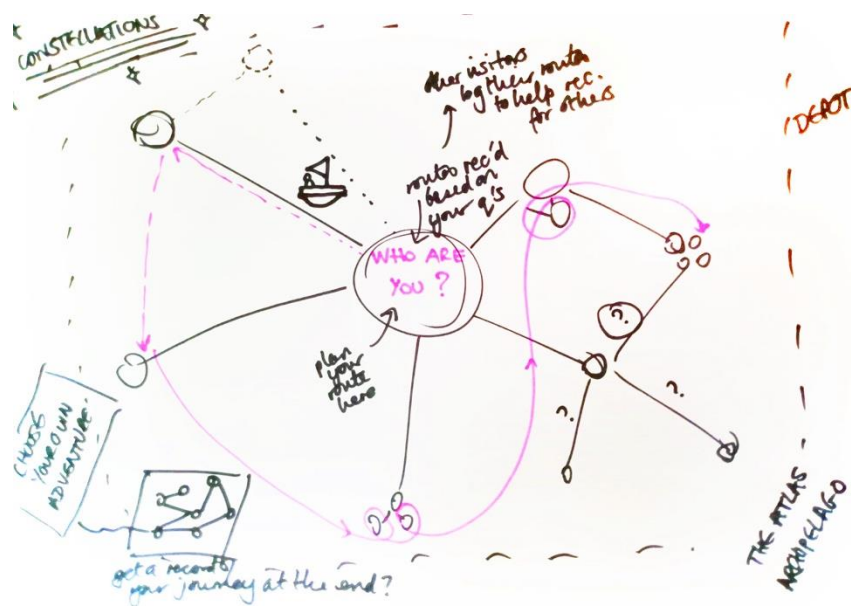


Figure 17. A sketch using the metaphor of “star constellations” to express Design Research.

The choice of natural phenomena as metaphors in these sketches is not arbitrary. By selecting metaphors such as rivers, skies, and constellations, Design Researchers acknowledge how their practice moves in unexpected ways similar to natural phenomena. Ultimately, this emphasises our inability to control every aspect of an investigation process, and is arguably a property of Design Research’s inherent emergence (Gaver et. al., 2022).

4. Analysis: Interactive Inspirations

This paper identifies six metaphors design researchers used to convey how they would interact with a Design Research Atlas. These metaphors also provide insights related to Design Research’s underlying epistemology, for example, the metaphor of soup reveals how design researchers produce knowledge acknowledging and embracing “messiness” as a fundamental quality of its process. In the following, we discuss these metaphors and their relations, both using them to consider how an *actual* Atlas for Design Research may work and to consider the drivers of the defining-finding dilemma. Following Blevis and Blevis (2018), in the following sections we explore generative takeaways rather than prescriptive design principles.

Bricolage interactions

The use of soup as a metaphor for Design Research may propose interactions based on bricolage principles, which means combining various practices that generate knowledge through making. To facilitate a bricoleur mode of interaction, we can provide various options to be arranged in countless ways. Instead of presenting predetermined results, learnings, steps, or practices, we can embrace designers' bricolage skills and offer multiple pathways, encouraging unexpected arrangements. Echoing the soup metaphors, rather than providing

a step-by-step guide or recipe on how to accomplish something, we present numerous ingredients, tastes, and flavours for users to interact with and negotiate through making.

Serendipitous interactions

The metaphor of games of chance highlights how design researchers embrace unexpected discoveries, contrary to rigorously planned or intention-bound research (Gaver et. al., 2022). As such, searching and discovering Design Research examples should reflect these values and promote serendipitous interactions. Instead of relying on traditional search engines that require specific inputs and keywords, serendipitous interactions can support unexpected yet valuable discoveries in information exploration (Liang 2012; Thudt, Hinrichs & Carpendale, 2012). By doing so, serendipitous interactions may also employ playful, pleasurable, and persistent search methods to facilitate creativity (Russ, 1993).

Object-oriented interactions

The metaphor of “gift boxes” reveals that the *things* we design—their materiality and tangibility—are a fundamentally significant aspect of Design Research. The metaphor highlights how design researchers typically promote interactions that extend beyond person-to-person communication, enabling network relationships that involve both humans and nonhumans. Consequently, designers tend to value modes of interaction with research outputs that not only accommodate their own stories and voices but also incorporate the biographies of objects and the interplay of human and nonhuman life forces (Wakkary, 2021). While alternative publication formats show promise (Yoo et. al., 2023), the value of materiality remains under-explored. As a result, an object-oriented interaction could reflect this need by building hybrid interactions between digital and physical worlds or aiming to reproduce as much as possible material qualities and experiences in virtual spaces. Rather than text, we can reclaim the protagonism of objects by acknowledging and promoting their agency in designed interaction and by taking into consideration the stories behind those objects.

Experiential interactions

The use of exhibitions to express Design reflects an important experiential element to exploring Design Research. This also exposes how design researchers often face challenges in making those tacit and experiential forms of knowledge accessible, as they do not adhere to conventional and verbal communication (Niedderer, 2007). Experiential interactions explore innovative ways to share and celebrate emergent, unsystematic learning processes, such as personal experiences and practice-based skills. Instead of merely focusing on textual or graphic outputs, this approach considers how we can employ not only multiple media but also various senses and sensations to convey the unique aspects of knowledge-making in Design Research.

Programmatic interactions

Maps format served as metaphors to stress systematic thinking and research programmes (Redström, 2017) as a key value in Design Research. This means that individual project units increasingly prove inadequate for narrating the story of Design Research, as they obscure the evolving trajectories of our thinking across various projects. Programmatic interactions aim to showcase and facilitate these connections, which are not always easy to communicate and identify. These connections can bridge projects, labs, universities, and disciplines, as well as ideas and learnings that gradually build more robust bodies of work. The main challenges, then, involve determining how we can interact with non-linear genealogies and dynamic connections or how we can make the links between time and space, concrete and abstract, and practical and theoretical more explicit.

Drifting Interactions

Reflecting Metaphors of rivers express drifting (Krogh & Koskinen, 2022) as a quality of Design Research. Yet classical research outputs still often depict their process as linear, frictionless, and focused on questions and answers. In contrast, drifting interactions propose shifting our attention to the process of drifting, not as an issue to be concealed, but as a valuable aspect of the Design Research process. It seeks a more transparent way of talking about our research by, for example, exposing the mistakes and failures that led our investigation to change or by reintegrating loose ends (Goveia da Rocha, Andersen & Tomico 2022) into our design and research outcomes. This perspective not only alters how we share our results but also how we make them discoverable. After all, acknowledging the ability to “drift” as a quality in Design Research also introduces the challenge to support interactions with non-linear and sometimes unfinished results that can change over time.

5. Conclusion

In this paper, we analysed 56 sketches produced in a polyphonic speculation-oriented workshop to explore a hypothetical interactive Design Research database and address what we defined as the “defining-finding dilemma”. Following this approach, we also explored underlying questions about knowledge-making in the field, including how we interact with research, how we produce knowledge and what epistemic qualities we value. These questions emerged as key issues to consider and understand in order to think about a database. Importantly, we examined these intertwined questions through the lens of metaphors and what could be understood as “polyphonic sketches”: an individual drawing comprising the perception of 2 or more participants. As we argued, this polyphonic approach helped us make sense of complex and abstract thoughts surrounding the Design Research landscape at the same time it also valued plural perspective in a fragmented field.

Following a thematic analysis, we found six different metaphors and qualities of Design Research, along with six corresponding inspirations for design interaction. Each quality expressed in the metaphors sought to challenge assumptions about what research outputs ‘should’ look like to reflect the epistemic traditions of Design Research. In terms of

interactions, search bars, keywords, text-driven documentation, normative taxonomies, and other conventions do not fully articulate what designers seek, how they search, and how they wish to share. This represents a fundamental interaction problem.

We propose six design interaction inspirations to explore alternative information search systems, currently dominated by text. These alternatives do not pretend to provide any fine detailed or prescriptive design principle but serve as key takeaways and inspiration (Blevis and Blevis, 2018). In summary, the six interaction inspirations call for a focus on objects and experiences rather than simply text; on processes and drifting instead of linear and systematic methods; on serendipity and chance rather than intention-bound project units; and on creative bricolage instead of prefigured findings to be discovered.

This paper contends that these qualities can be underrepresented in Design Research outputs if they must conform to formats that are not sufficiently flexible. While we recognize the politics and challenges of overcoming an academic landscape dominated by traditional sharing methods, we note that the innovative nature of Design Research should not take these for granted but continue to push the field forward in this direction.

Lastly, as discussed at the beginning of this paper, the difficulty in finding Design Research examples reflects the fragmentation, ambiguity, and heterogeneity of a domain that largely remains in a "pre-paradigmatic" stage (Gaver, 2012; Green & Lindley, 2021). We argue that the proposed alternative interactions may help address this issue without necessarily sacrificing the richness of this multifaceted field. These alternative interactions allow us to remain sceptical of standardisation, homogenisation, and essentialist perspectives while proposing incremental steps towards further consolidation of the field.

Acknowledgements: Blank for review.

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