

WAYS OF SEEING DESIGN RESEARCH: A POLYPHONIC SPECULATION

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ABSTRACT

We present six speculative designs that all explore the challenge of representing the broad corpus of Design Research in the form of an interactive data repository. We describe the development of the ideas, identify common themes, and highlight two related challenges: (i) The challenge of reflecting the *diversity* of Design Research in a repository; (ii) The challenge of capturing *context(s)* during the Design Research process. We argue that these challenges constitute a ‘causality dilemma’ that is inhibiting the Design Research movement. We offer insights into potential responses to the dilemma, signpost opportunities for future work and reflect on the value of ‘polyphonic speculation’ – dialogue between design researchers speculating through design on a common topic – as a design tool for probing complex challenges.

INTRODUCTION

Where do you go to find examples of Design Research? There are many places to look, such as the Digital Libraries of the Design Research Society (DRS) and the Association for Computing Machinery (ACM), as well as academic journals in Art, Design, the Humanities, and the Sciences. Many of these resources are discoverable through search engines like Google Scholar. Yet, Design Research organises under many labels (Frayling 1994) and its knowledge outputs take many forms (Pierce, 2021), from academic papers and pictorials to various media, products, services, and more. Only a fraction of these has a digital object identifier (DOI) like the one at the bottom of this page.

Many examples of Design Research exist piecemeal, as fragments in images, videos, blogs, etc. Many do not identify as Design Research (Lindley & Coulton, 2020). Some of the richest resources can only exist outside of text: posters, demos, etc. Prototypes in cupboards the world over harbour rich stories and histories. Yet, they often remain locked away, behind closed doors. Some are ephemeral; transient; exhibitions in museums and galleries; events like Dutch Design Week.

With such a fragmented landscape, gaining an overview of the field of Design Research can be difficult. This is a problem... Not just for newcomers to Design Research, who may be unaware of its material diversity, but also for the field itself, which continues to grapple with a fragmented identity (Gaver, 2012; Green et al, 2021) and publication paradigms that do not always play to its strengths (Lindley et al, 2021).



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Academic publications – even multimedia formats such as pictorials and videos – are not well-suited to communicating the materiality, physicality, textures, interactivity, and depth of Design Research knowledge. The *Research through Design* conference (RtD, established 2013) confronts this challenge through its structure, however, which includes a parallel exhibition of Design Research artefacts, as well as “rooms of interest” that curate related work in a gallery-like setting, and presentations that adopt a show-and-tell format reminiscent of art school ‘crit’ sessions. However, beyond conferences like these, the forms of knowledge and insight that Design Research offers are harder to locate. It is therefore difficult for newcomers, outsiders, and domain experts alike to gain or maintain an overview of the field. There is a widely shared enthusiasm across the Design Research community to share knowledge more openly and comprehensively. How can we better support this objective?

WHAT IF THERE WAS AN INTERACTIVE REPOSITORY FOR DESIGN RESEARCH?

In this exploratory paper, we consider the challenge of making Design Research more comprehensively accessible, through a speculative design inquiry, in which six designers each responded to the prompt: *What if there was an interactive repository for Design Research?* As a constructive limitation, we chose to frame the speculation around a database. This also meant that we might ultimately confront the challenge of integrating with—or contributing to the evolution of—existing digital systems (e.g., Google Scholar).

BACKGROUND

The work presented here began in a pictorial by three of the authors that was never published (*Fig 1*). It was rejected from several peer-reviewed Design-oriented publication venues (ACM DIS2021, IASDR2022, and DRS2022).

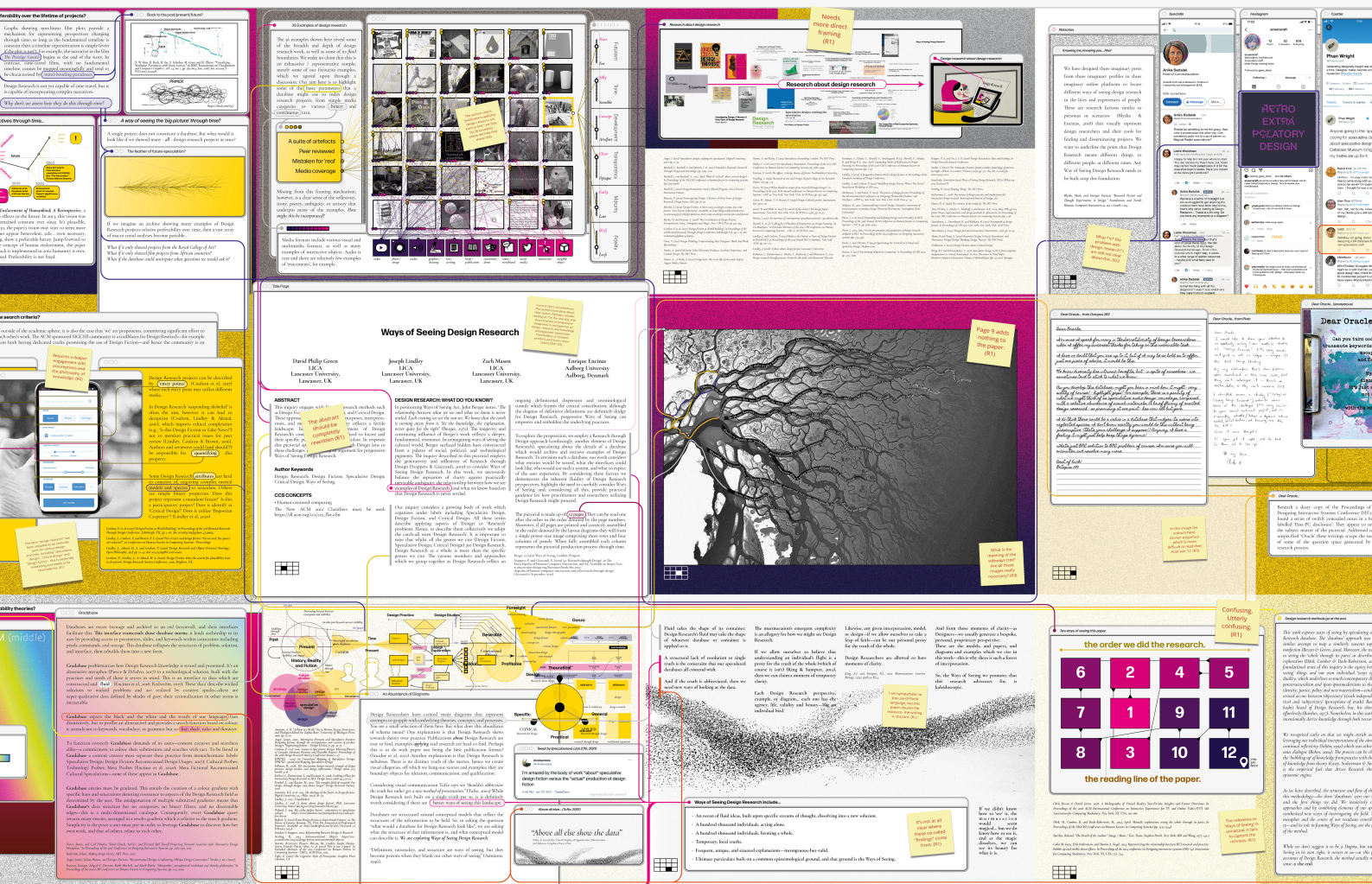


Fig 1 – an overview of one iteration of the unpublished pictorial (not intended to be legible at this scale). The depiction here shows the assembly of the 12 pages as a visual collage. The grid on the bottom right shows two possible “ways of seeing”.

It received divisive reviews on all three occasions. We subsequently showcased a version of the work at the Uroboros Festival, in a presentation that included some reflections on the reviews and the reasons given for its rejection(s) (e.g. “*R1 wonders if the paper is academically sound.*”)

The initial aim of the original pictorial was to explore the same challenge that we are exploring here: the challenge of representing the field of Design Research in an interactive repository. We began with three speculative designs (#1, #2 and #3 below), which we developed separately and then brought together as the basis for discussions. Through these discussions, we developed a framing and an extended commentary that brought together elements of poetry, photography, graphic design, data visualisation (Fig 2) and fiction – including correspondence with a fictional ‘oracle’.

“WAYS OF SEEING”

The concept for the pictorial was that it could be read in two ways: *both* as a standard linear paper *and* as a visual collage. The paper could be assembled into a form that revealed a map of connections between ideas in the paper. Hence, we made our argument in two ways; firstly, through the content of the pictorial and, secondly, through its form, which was intended as a visual metaphor for multiple “Ways of Seeing” (Berger, 2008), drawing also upon the postmodern media philosophy of Marshall McLuhan, for whom, “*the medium is the message*” (McLuhan & Fiore, 1967).

Uniting these ideas, our epistemological stance was that form, content and interpretation combine to create fluid meanings within Design Research. Some of the reviewers of the pictorial felt our message was obscured by these ‘meta’ reflections. Others didn’t accept the visual style we adopted. Nevertheless, with the insights gained from our previous failures, we resolved to try and publish a version of the work again. Our latest, revised, and expanded attempt to convey the work is what follows.

METHOD

This exploratory paper returns to the original aim of the earlier pictorial: to consider an interactive repository of Design Research data. What follows is an (updated) suite of six speculative designs, one by each of the six authors of this paper, all of whom are designers, and/or researchers and/or design researchers. The first three designs are edited versions of those from the original pictorial. The last three designs were produced in response to the same idea (with the first three designs and the pictorial made available as examples). In other words, designs #4, #5, and #6 can be considered as ‘responses’ to designs #1, #2, and #3. However, they are also discrete, novel concepts.

For the purposes of communicating the work as clearly as possible here, we have abandoned most of the creative flourishes from our previous pictorial. The lead author of this paper has also edited the six ideas into a consistent presentation format. The designs are all thought experiments. They are not intended as concepts for development, but rather as explorations of an opportunity space. We did not stipulate who the database should be for, nor what its purpose should be.

POLYPHONIC SPECULATION

We call our approach ‘polyphonic speculation’. In doing so, we draw on the concept of “polyphony” (Bakhtin, 1984) and appeal to ‘the wisdom of the crowd’ for insights that might otherwise elude us as individuals. Specifically, we invited multiple responses to our shared brief and used the designs to stimulate discussion.

The approach draws upon our earlier pictorial, but it also introduces an element of dialogue through iteration. It finds common ground with recent work by Elsdén et al (2022), which used a similar ‘polyphonic’ approach. By inviting speculation based on a short brief, we sought to frame discussions around plausible futures. Our aim was to facilitate a collective imaginary about a repository of Design Research and discuss it. We also draw upon the traditions of ethnomethodology (Firth, 2022) that values the reflections and perspectives of researcher(s), who in this case also act as designers.

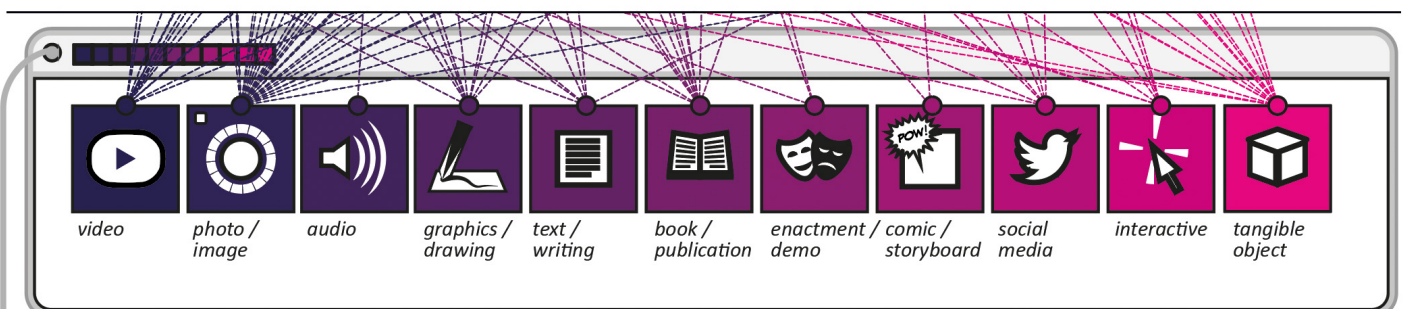


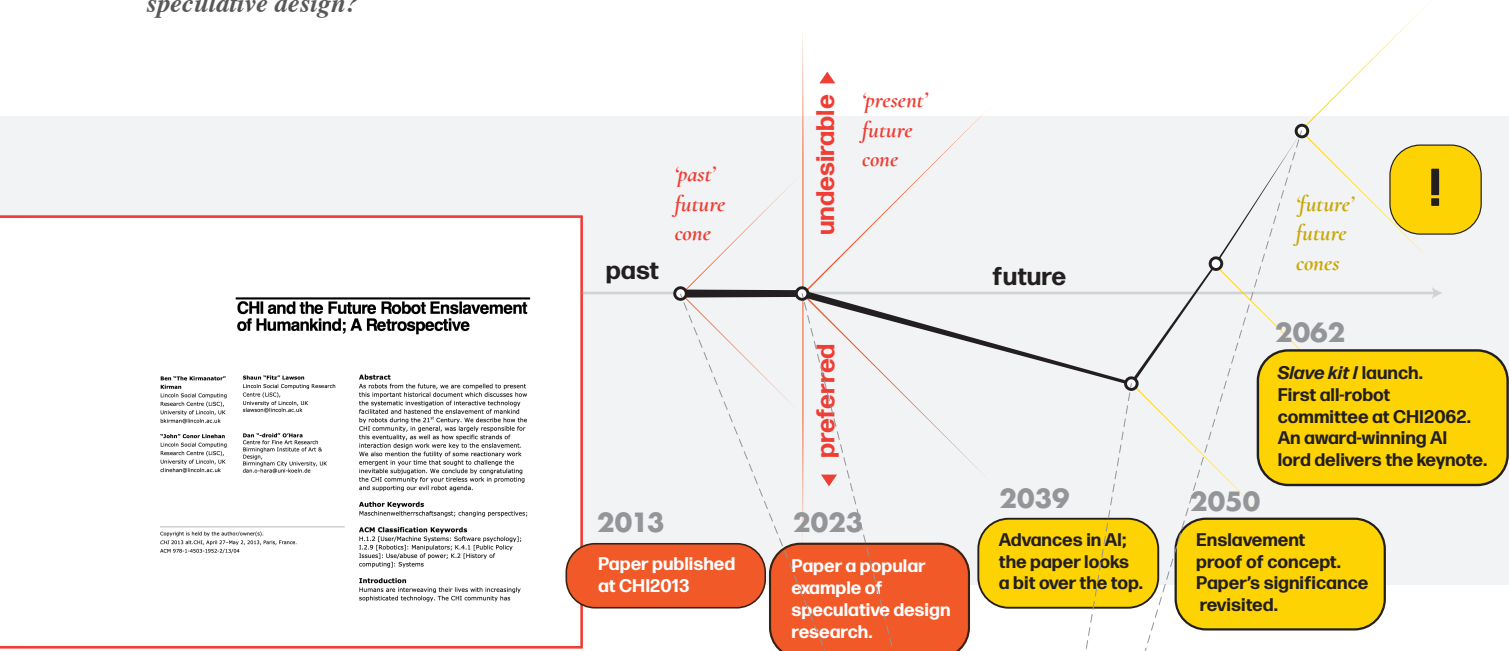
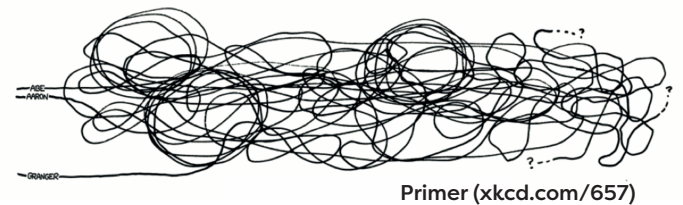
Fig 2 – Design Research media categories – non-exhaustive, derived from 36 examples (*detail from original pictorial*).



#1 of 6

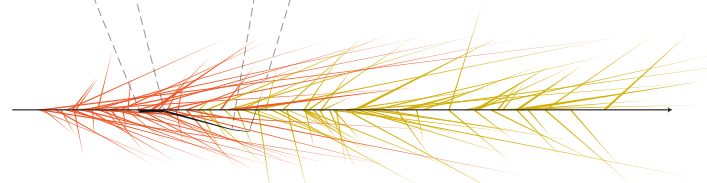
What if the database mapped preferability over time?

Graphs showing non-linear film plots depict changes through time. When the timeline is constant, this is simple (even if the plot is not!). In contrast, time-travel films, with shifting timelines, tend to be characterised as paradoxes (right). Speculative Design Research often considers the future, but it builds upon and reflects our interpretations of the past.... *As imagined futures turn to parallel pasts, do we have the tools to make sense of the ageing corpus of speculative design?*



A feather of (retro) speculation?

What would it look like if we showed many - or all - Speculative Design projects at once? Using the 'futures cone' as a basis for a visualisation - enables a vast array of macro trend analyses...



Obviously Fiction

#2 of 6

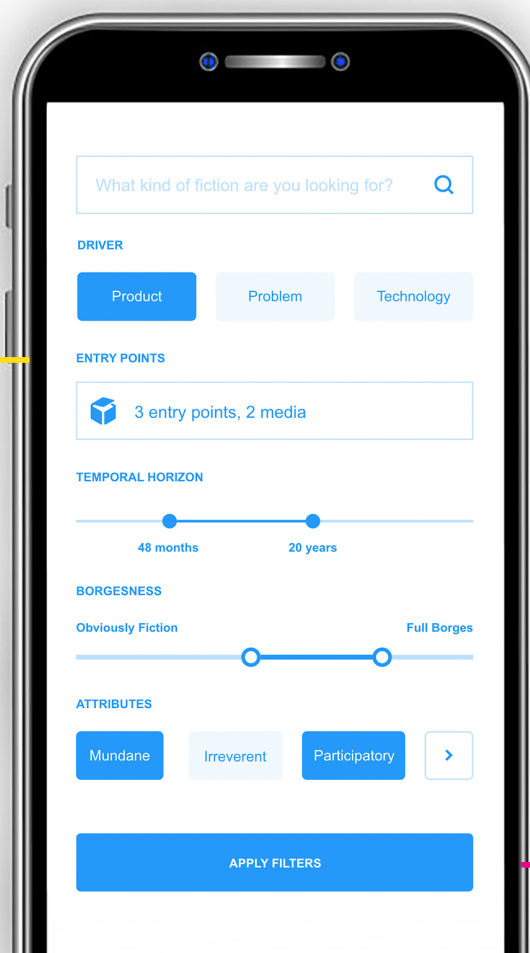
What if the database used search criteria like "Borgesness"?

Academic researchers are some of the keenest proponents of Design Research. The ACM sponsored SIGCHI community is a trailblazer for Design Research and the community commits significant effort to producing, reviewing, and observing each other's work.

A lot of Design Research has been published at ACM conferences. It can all be found in the ACM's Digital Library (dl.acm.org) but it isn't easy to get it out. *If the relevant contents were appropriately marked-up with relevant metadata, what might the interface look like?*

Entry points

Design Research projects can be described by 'entry points' where each entry point may utilize different media. *How might we reference, quantify and qualify these different entry points and what metrics are likely to be informative to users?*



Full Borges or Fake News?

In Design Research, 'suspending disbelief' is often the aim, but it can lead to deception, which imports ethical complexities and practical issues for peer review. *Should authors and reviewers be responsible for quantifying this property?*

#3 of 6

What if the database wasn't driven by usability theories?

Gradabase transcends database norms and lends authorship to users by providing access to parameters, sliders, and keywords within constraints including pixels, commands, and storage. *What would it mean if the structures of problem, solution, and interface were collapsed; rebuilt in a new form?*

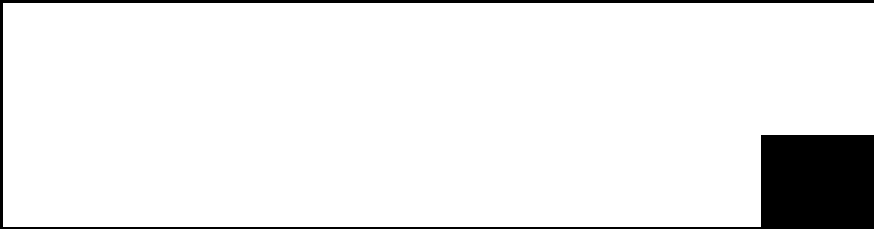
Gradabase is an alternative metaphor to a technological solution, built to reflect the practices and needs of those it serves. It is an interface to data which are constructed and fluid. These 'data' describe wicked solutions to wicked problems; super-qualitative data defined by shades of grey; their rationalization in other terms is intractable.

LAYER 0



LAYER M (middle)

To function correctly, Gradabase demands of its users - content creators and searchers alike - a commitment to colour their submissions and searches with tact. To be listed in Gradabase a content creator must separate their practice from monochromatic labels like "Speculative" or "Critical" - labels do not appear in Gradabase. Gradabase entries must be gradated. This entails the creation of a colour gradient with specific hues and saturations denoting resonance to aspects of the Design Research field as determined by the user. The amalgamation of multiple submitted gradients means that Gradabase's data structure has no categories, no binary filters, and no discernable edges. This is a multi-dimensional catalogue. Consequently, every Gradabase query returns many entries, arranged in a results gradient which is relative to the search gradient. Simplicity is the price a user must pay in order to leverage Gradabase to discover how her own work, and that of others, relate to each other.



#4 of 6

What if the database banned words like ~~usability~~ ?

Knowledge is power. Unfortunately, this means concepts like “expert knowledge” can legitimize some groups' interests over others; comonly favouring the already-powerful, as opposed to people in subaltern positions. “The Book of Forbidden Words” draws upon this premise to critique the use of “expert language” in Design Research reporting.

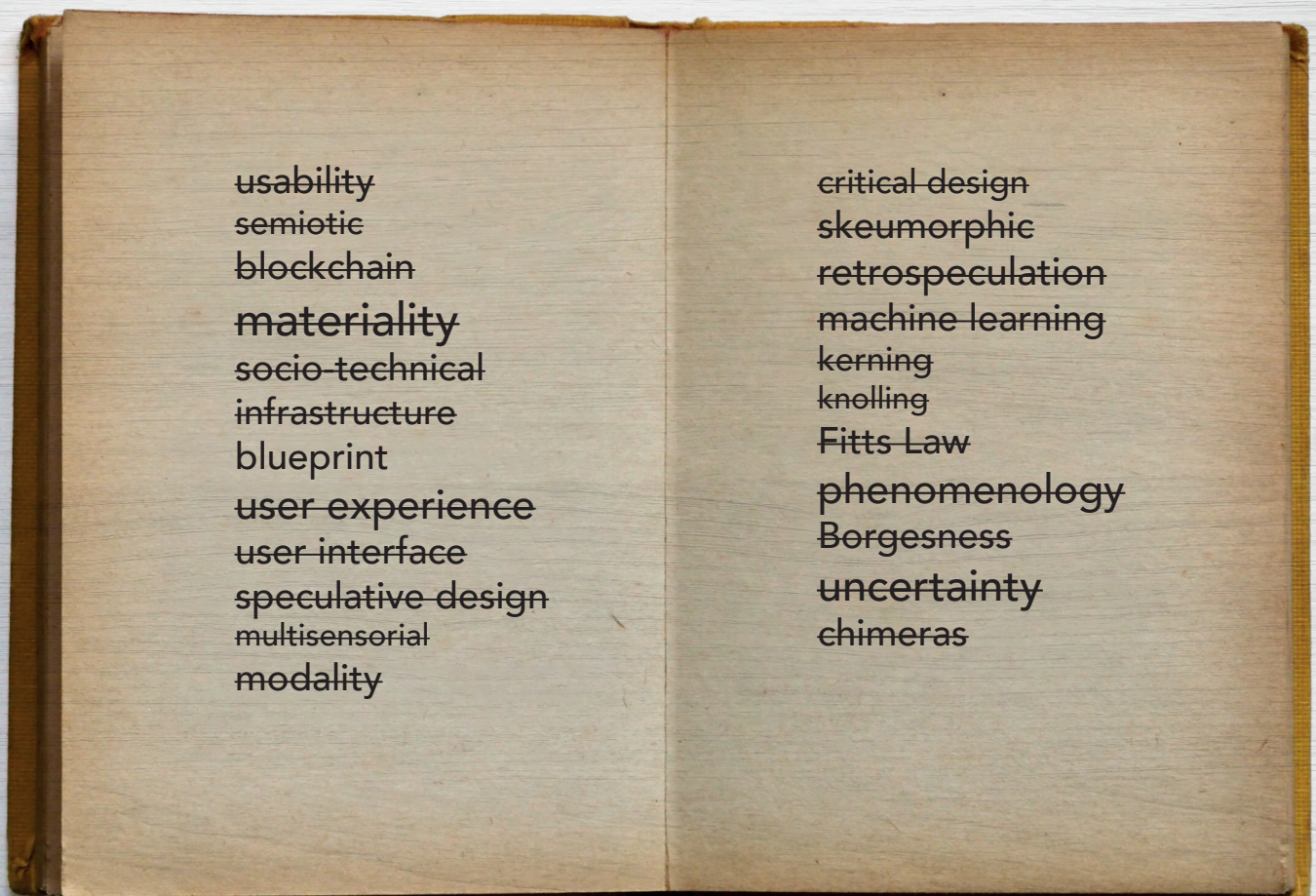
The Book of Forbidden Words is a platform where anyone can upload their Design Research, but every time a “forbidden” word is used - or even an expression to explain such a word - the database sounds its patented “bullshit detector”.



Which words are forbidden?

~~usability~~
~~semiotic~~
~~blockchain~~
~~materiality~~
~~socio-technical~~
~~infrastructure~~
~~blueprint~~
~~user experience~~
~~user interface~~
~~speculative design~~
~~multisensorial~~
~~modality~~

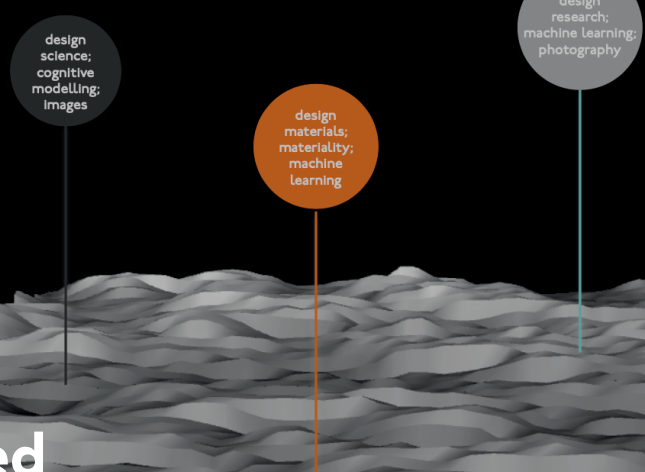
critical design
 skeumorphic
 retrospeculation
 machine learning
 kerning
 knolling
 Fitts Law
 phenomenology
 Borgesness
 uncertainty
 chimeras




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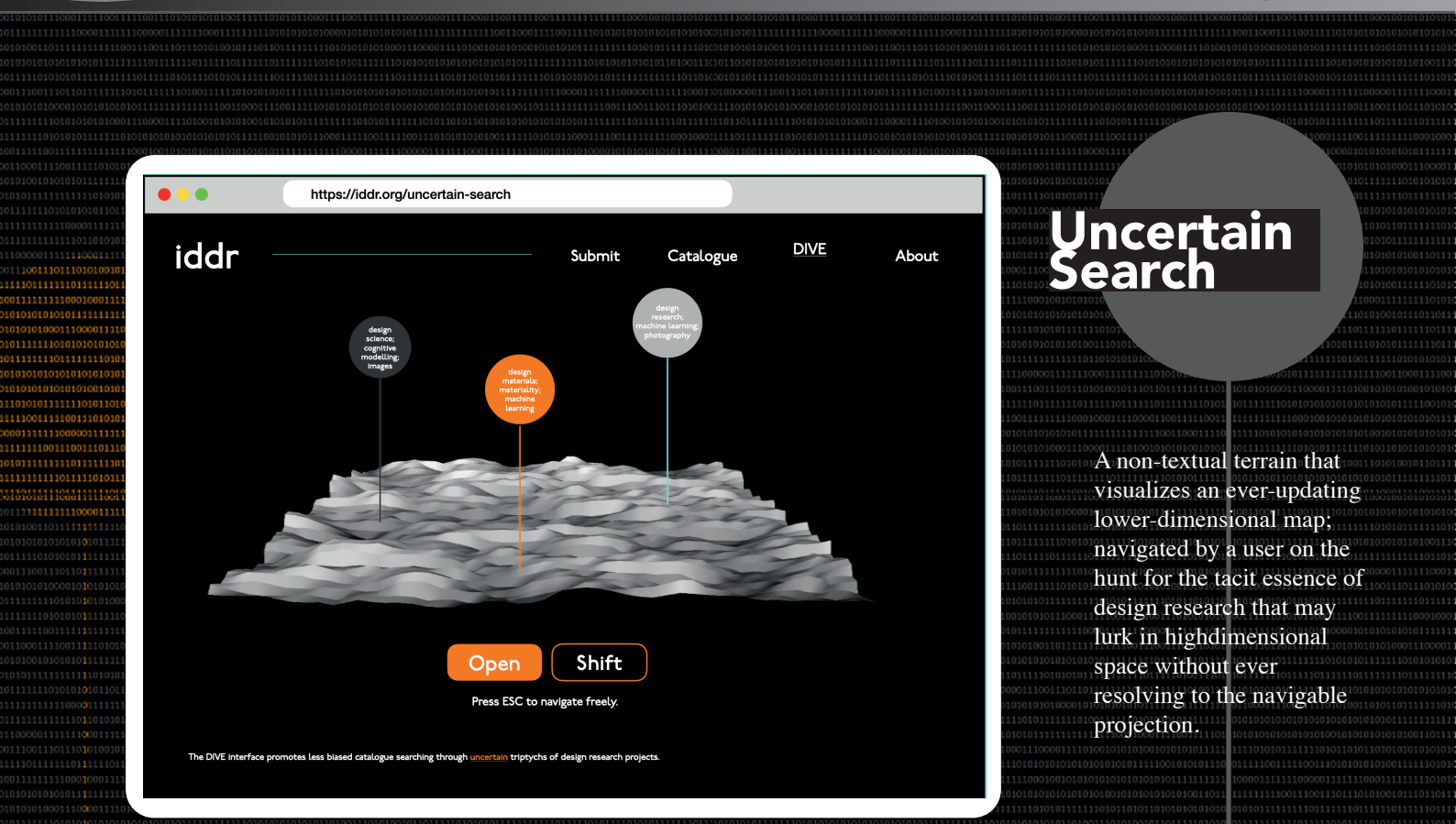
#5 of 6

What if the database utilised informatic uncertainty?

Probabilistic technologies such as machine learning are becoming increasingly mainstream (Benjamin et al, 2021), so perhaps now is the time to harness the power of ambiguity (Gaver et al., 2003) or “uncertainty” to explore the field of Design Research? The “curse of dimensionality” (Chen in Ling and Öszu, 2009:245)

suggests complexity can be daunting, but Gurban and Tyukin (2018) argue that, on the contrary, as interrelationships proliferate and complexify, “the laws become simpler.”

Eschewing specificity, can we trust a probabilistic model to reveal the essence of Design Research through tacit connections?



Uncertain Search

A non-textual terrain that visualizes an ever-updating lower-dimensional map, navigated by a user on the hunt for the tacit essence of design research that may lurk in highdimensional space without ever resolving to the navigable projection.



#6 of 6

What if the database mapped RtD chimeras?

Design, and Design Research by extension, is in its core a multidisciplinary and pragmatic endeavor. As such it tends to fill the borders between existing and established fields. Research through Design (RtD) is a tool that can bridge seemingly irreconcilable disciplines through creative synthesis. This concept proposes the clustering and mapping of the diverse work undertaken in different fields of Design Research. The map aspect as an interface for visualising information aims to provide a novel perspective

of Design Research and Design Researchers. Seeing the different research outputs in relation to each other and the areas that they populate, from the fertile plains of HCI to the plateaus of Pragmatism. In addition the interactive map has the capacity to illustrate the journey through these areas of each design research in time. Just like medieval maps chimaeric monsters lurk in the borders, edges and uncharted waters.



Do we feed and tame or slay these monsters?

"...their flesh is a synthetic meat..."

The Butcher of Cartadesina

FINDINGS

The six designs all present different ideas for a database of Design Research.

#1 combines graphical film plots and the futures cone (REF) in a temporal framework, framed by the question, “*what if the database mapped preferability over time?*”

#2 is an app interface with novel search parameters, framed by the question, “*what if the database used search criteria like ‘Borgesness’?*” (after Jorge Luis Borges, the Argentine postmodernist).

#3 eschews categories and labels in favour of a fluid gradient metaphor, framed by the question, “*what if the database wasn’t driven by usability theories?*”

#4 is a “book of forbidden words”; an experiment in creative censorship, framed by the question, “*what if the database banned words like usability?*”

#5 is an interface that leverages uncertainty via machine learning, framed by the question, “*what if the database utilised informatic uncertainty?*”

#6 is an imaginative map of the hybrid forms of Design Research, framed around the question, “*what if the database mapped RtD chimeras?*”

There are many differences in form, presentation, and content. Some are closer to thought experiments, while others have more detailed interface elements. In the discussion below, we highlight two key challenges that came out of our discussions that—we argue—combine to form a *causality dilemma* that may be inhibiting the field of Design Research.

DISCUSSION

CHALLENGE 1 – REFLECTING THE DIVERSITY OF DESIGN RESEARCH IN A REPOSITORY.

Design Research is defined by *diversity*. It incorporates multiple “ways of seeing”. This manifests in the form of diverse materials (cf. *Fig 2*), diverse *combinations* of materials and diverse *connections* between materials. Our work suggests that there are also at least three other dimensions to this diversity: a diversity of *perspectives*, diverse *contextual factors*, and diverse *interests*.

I - DIVERSE PERSPECTIVES

All six designs reflect the co-existence of diverse perspectives in Design Research. #1 considers how perspectives change over time. #2 describes “entry points”, where different media offer complementary perspectives on a project’s speculative ‘world’. #3 includes both contributor and user perspectives in its interpretative device of ambiguous “gradients”. #4 critiques the way language can subtly prioritise certain perspectives over others. #5 introduces the notion of a

machine learning algorithm – a probabilistic high-dimensional perspective on the data that is unattainable to humans. #6 presents mystical monsters as metaphors for the hybrid perspectives of multi-disciplinarity.

Diverse perspectives are a common feature of research *review* processes, but they are not commonly foregrounded in research *reporting*, which typically prefers to present a consensus view. Yet the co-existence of multiple perspectives in Design Research is fundamental to the kinds of knowledge it generates.

What if the plurality of multiple perspectives was a core feature of the database?

II - DIVERSE CONTEXTS

Some features of our designs, such as the “feather of retro-speculation” (#1) and the “temporal horizon” (#2) highlight differences between the contexts in which Design Research data are collected and the contexts in which they are accessed. Some designs situate their records in the context of other Design Research work. #1, #3, #5, and #6 use various kinds of ‘map’, each with differing underlying logics, but all designed to situate projects *in relation to* other projects. This shared concern for contextuality suggests Design Research might need to be understood ‘in relation to’ other work. Traditional research publishing communicates these relationships through citations, but our ideas call for something more dynamic and nuanced than a static page of references.

What if references to other work were dynamically adaptive to emergent contexts?

III - DIVERSE INTERESTS

Some of our database designs call for specific domain knowledge, such as familiarity with the futures cone (#1), or a willingness to engage with complex concepts (#2) such as “uncertainty” (#5) and “chimeras” (#6). Other designs are critical of exclusivity (#4) or even ‘specificity’ altogether (#3). #4 directly critiques the role of language in making Design Research exclusive. Elsewhere, the critiques are more subtle (e.g., we all assumed that the repository was in English). #2, #3 and #5 all suggest, in different ways, that written or verbal language may not be an entirely appropriate search paradigm for Design Research. Although search boxes are included in some of the designs, #2 includes continuous slider inputs between abstract parameters that tease the limits of how we tend to interact with research datasets. #3 and #5 incorporate user-determined and machine-driven uncertainty respectively to undermine the primacy, and perhaps circumvent the limitations, of language as a search tool.

A feature of each of the designs, which could help to resolve this tension between ‘specificity’ and ‘ambiguity’ is the use of *metaphors*: The gradient as a

visual metaphor for the absence of concrete labels; forbidden words as a metaphor for radical exclusion criteria; chimeras as metaphors for cross disciplinarity and hybrid epistemologies. Metaphors can attenuate the negative effects of ambiguity by having a clear intention and room for interpretation.

What if the database leveraged metaphors to balance the uncertainties and specificities of Design Research?

CHALLENGE 2 - CAPTURING CONTEXT(S) DURING THE DESIGN RESEARCH PROCESS.

It was not our intention that our ideas should (or could) be implemented into functioning products or services, but it is notable that all would be impossible to implement without metadata that are not routinely collected during Design Research processes. Current Design Research practices do not capture information about the specific coordinates of the diversity of perspectives, contexts, connections, and interests involved in the research process or its outcomes. Might this highlight a shortcoming in our reporting processes? Should we be more proactive in our efforts to acknowledge and represent plural perspectives, and/or dynamically generate connections to other work? Can *metadata* be *metaphorical*? What additional data would we need to capture to make a repository viable?

There are multiple dimensions to consider. Indeed, #5 alludes to “the curse of dimensionality” (Chen, 2009). In one sense, this reflects the fact that Design Research is a broad church. It also reflects the difficulty of making the field accessible, as it can be challenging to compare individual projects to other – often disparate – projects in a typical database format.

Let’s consider, for a moment, the nature of the ‘records’ in our imaginary repository. In conventional database designs, records tend to be discrete, equivalent units. For example, for Google Scholar, each record is ‘a publication’ (e.g., a paper or a book). Most of our designs assumed that each record in the repository would be ‘a research project’. However, if we expand the focus, so that each record is ‘a research program’ (c.f., Gaver et al, 2022), we then encounter individual projects only in the context of a wider body of work. Emphasising the connective tissue *within* research programs - *between* research projects in this way could enrich the dataset with detailed contextual information.

Focusing on ‘research programs’ could also help attenuate the dimensionality problem, and perhaps legitimise more honest, less ‘positivistic’ accounts of research processes. We included the detail of our failed publications above as an attempt to demonstrate how unflattering details about process are commonly lost in constructed visions of coherent research. We habitually devalue the manifold “loose ends” (Goveia et al, 2022) that are often so informative to our process.

Future work might look at ways to place more value and emphasis on the processes, through-lines, connections, and contexts of Design Research, and how to make these elements more visible in databases and throughout the research publishing process.

A CAUSALITY DILEMMA

The two challenges we have described here combine to form a ‘chicken-and-egg’ style causality dilemma that is inhibiting the potential impacts of Design Research.

On the one hand, without comprehensive metadata to reflect the diversity of concerns Design Research represents, it is difficult to imagine how a repository can facilitate meaningful discovery and browsing across the corpus of Design Research. On the other hand, without accessible channels for disseminating details about the process(es) and context(s) of Design Research, there is a lack of structure to facilitate the collection of these details.

We contend that this is an important challenge, but it is not one that will be easily resolved. New publication formats might be needed to better reflect the richness and materiality of Design Research. We may also need to adopt more reflective documentation processes, which presents myriad practical challenges that would be prudent to consider in future work.

Our aim here is not to resolve the dilemma, but to raise the issue, ask some probing ‘what if?’ questions and offer some broad-brush suggestions, such as shifting focus from ‘projects’ to ‘programs’. In doing so, our aim is to advance the discourse and contribute some preliminary parameters for new publication vectors for Design Research.

CONCLUSION

The unresolved challenge of representing the diversity of Design Research is holding the back the movement. We need publication channels that are more accessible, more comprehensive, and that give richer insights into the diversity of Design Research work. This is a challenge because these kinds of insights are not routinely captured. We therefore also need new approaches to documenting, archiving, indexing, and sharing Design Research and renewed emphasis on capturing and sharing processes and contexts. Future research should evaluate these ideas and establish strategies to operationalise change.

Finally, we hope that designers, researchers and design researchers will be inspired by our novel approach – ‘polyphonic speculation’ – which, as we have shown, has value as a tool for collectively speculating in relation to complex challenges, through a process of speculative design, dialogue and reflection.

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